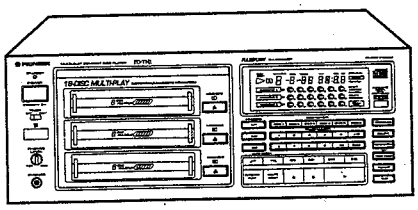
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2462

MULTI-PLAY COMPACT DISC PLAYER

PD-TM2

PD-TM2 HAS THE FOLLOWING:

Type	Power Requirement	Remarks
KU	AC120V only	
KC	AC120V only	
HEM	AC220-230V, 230-240V (switchable)*	
SD	AC110V, 120-127V, 220V, 240V (switchable)	

* Change the connection of the power transformer's primary wiring.

- **This manual is applicable to PD-TM2/KU, KC, HEM and SD.**
- **For KC, HEM and SD types, refer to page 76.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS AND PARTS LIST 4
3. PACKING 11
4. SCHEMATIC AND P.C.BOARDS CONNECTION DIAGRAM 12
5. PCB PARTS LIST 31
6. ADJUSTMENTS 34
6. REGLAGES 48
6. AJUSTES 62
7. FOR KC, HEM AND SD TYPES 76
8. CONNECTIONS 78
9. PANEL FACILITIES 79
10. SPECIFICATIONS 80

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This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

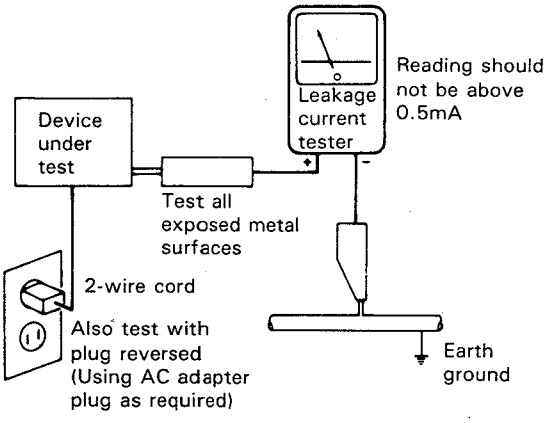
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Reading should not be above 0.5mA
Leakage current tester
Device under test
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn
varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

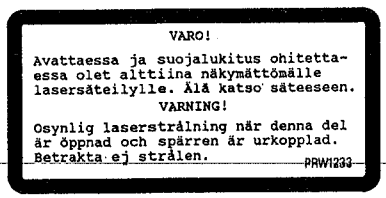
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for
laser radiation

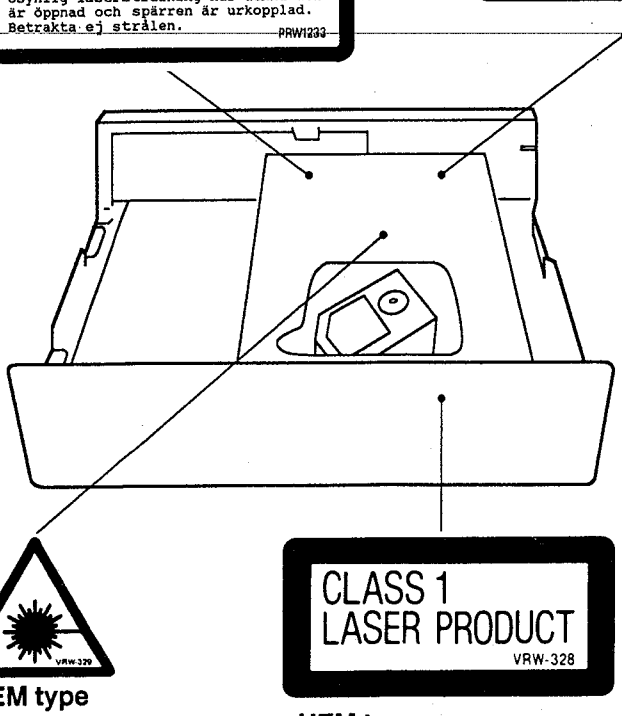
LABEL CHECK (MULTI MAGAZINE type)

HEM type


VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.
PRW1233

HEM type

ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094



HEM type

HEM type

Additional Laser Caution

1. Laser Interlock Mechanism
   The ON/OFF (ON: low level, OFF: high level) status of the LPS1 and LPS2 signals of Clamp switch (S102) for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when the LPS1 signal is not OFF (high level) and LPS2 signal is not ON (low level) (clamped state).
   Thus, interlock will no longer function if the LPS2 signal of Clamp switch (S102) is deliberately shorted to GND.
   Interlock does not also operate in the test mode*.
   Laser diode oscillation will continue, if pins 1 and 2 of M51593FP (IC101) on the preamplifier board loaded on PICKUP assembly are connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

*: Refer to page 37.

2. EXPLODED VIEWS AND PARTS LIST

NOTES:

- *The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

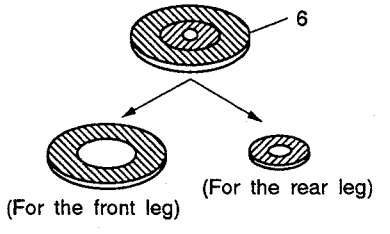
2.1 EXTERIOR

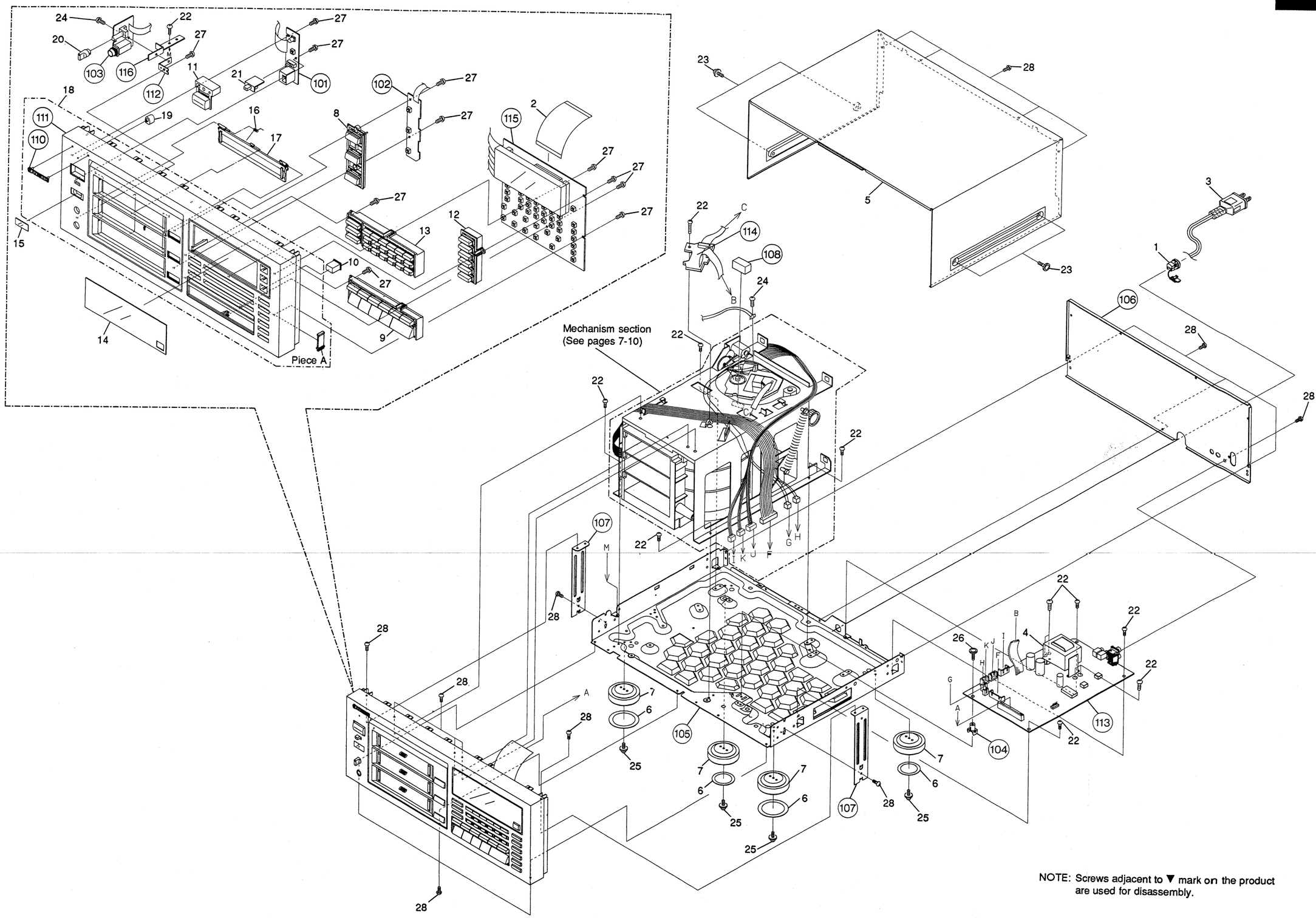
Parts List of Exterior

Mark	No.	Description	Part No.
⚠	1	Strain relief	CM22-C
	2	Flexible cable (40P)	PDD1122
⚠	3	AC power cord	PDG1015
⚠	4	Power transformer(AC120V)	PTT1241
	5	Bonnet	PYY1150
	6*	Stopper	PNM1070
	7	Insulator	PNW1263
	8	Eject button	PAC1555
	9	Operation button	PAC1683
	10	Auto level button	PAC1559
	11	Power button	PAC1569
	12	Program button	PAC1575
	13	Track button	PAC1684
	14	Display window	PAM1474
	15	Sensor window	PAM1475
	16	Door spring	PBH1022
	17	Door	PNW2138
	18	Function panel assembly	PEA1230
	19	LED lens	PNW2019
	20	Headphone knob	RAC1366
	21	Slide knob	RAC1428
	22	Screw	BBZ30P060FMC
	23	Screw	FBT40P080FZK
	24	Screw	IBZ30P080FCC
	25	Screw	IBZ30P120FCC
	26	Screw	IBZ30P180FMC
	27	Screw	PPZ30P100FMC
	28	Screw	BBZ30P080FCC

Mark	No.	Description	Part No.
	101	Power switch assembly	PWZ2373
	102	Sub function board assembly	PWZ2372
	103	Headphone board assembly	PWZ2375
	104	P.C.B mold	AMR1525
	105	Under base	PNA1556
	106	Rear base	PNA1848
	107	Side angle	PNB1271
	108	Spacer	PNM1195
	109	••••••	
	110	PIONEER badge	PAM1407
	111	Function panel	PNW2184
	112	HP angle	PNB1278
	113	Main board assembly	PWZ2338
	114	Connection board assembly	PWZ2379
	115	Function board assembly	PWZ2371
	116	Earth plate T	PBK1096

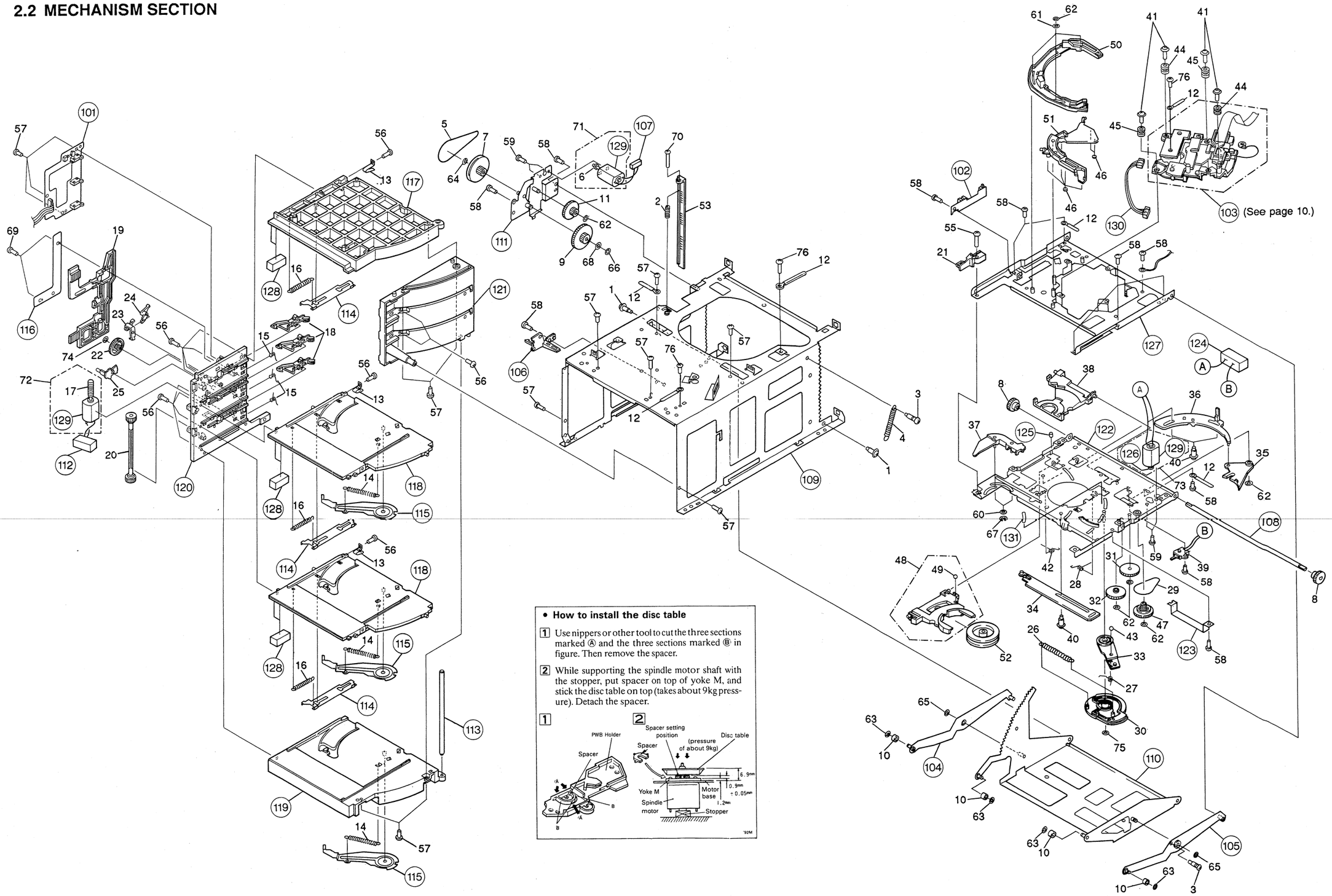
* The stopper consist of the big ring part and the small ring part. If you stick the stopper to the leg, stick the big ring part to the front leg, and the small ring part to the rear leg.





NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.

2.2 MECHANISM SECTION



• **How to install the disc table**

1 Use nippers or other tool to cut the three sections marked Ⓐ and the three sections marked Ⓑ in figure. Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of yoke M, and stick the disc table on top (takes about 9kg pressure). Detach the spacer.

Parts List of Mechanism section

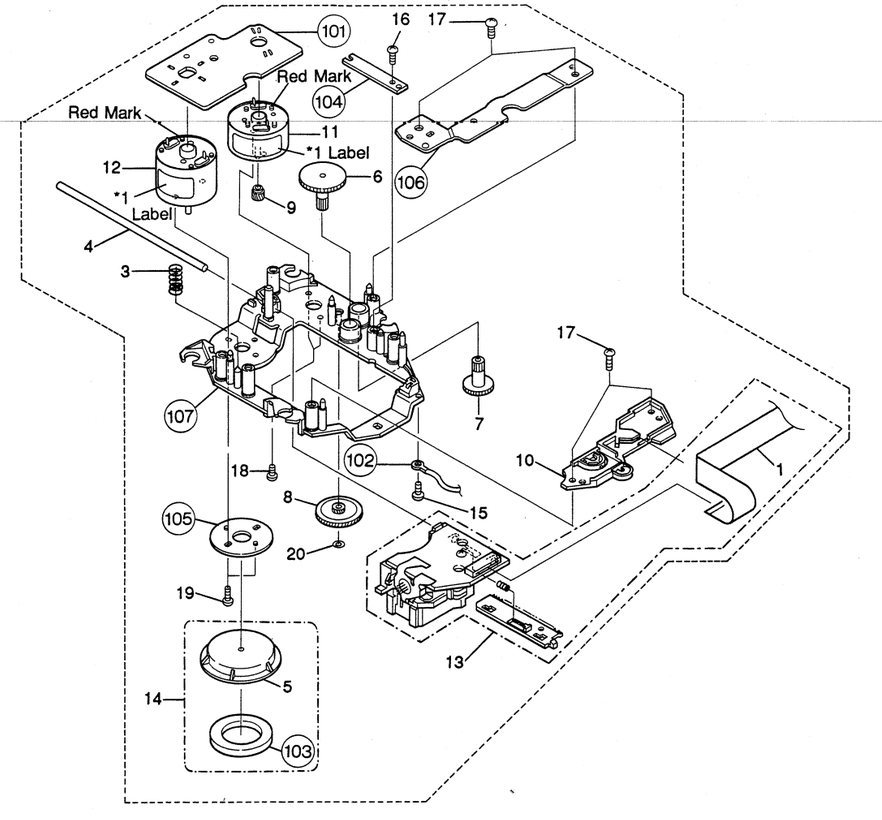
Mark	No.	Description	Part No.
	1	Link screw	DBA1023
	2	Sensor spring	DBH1102
	3	Select screw	PBA1051
	4	Select spring	PBH1116
	5	Belt	PEB1154
	6	Motor pulley	PNW1634
	7	Gear pulley	PNW1960
	8	Synchro gear	PNW1962
	9	Drive gear	PNW2059
	10	Roller	PNW1967
	11	Gear 1	PNW2060
	12	Cord clamper	RNH-184
	13	Holder spring	DBK1028
	14	Eject spring	PBH1130
	15	Lock spring	PBH1117
	16	SM spring	PBH1015
	17	Worm	PNW1220
	18	Lock lever	PNW1956
	19	Eject plate	PNW1957
	20	Synchro gear	PNW1958
	21	Select lever	PNW1959
	22	Worm cam	PNW1961
	23	SW lever A	PNW1964
	24	SW lever B	PNW1965
	25	Drive shaft	PNW1969
	26	Spring	PBH1124
	27	Tension spring	PBH1123
	28	Clamper spring B	DBH1120
	29	Belt	DEB1104
	30	Main gear	DNK1568
	31	Gear A	DNK1569
	32	Gear B	DNK1570
	33	Drive lever	DNK1571
	34	Drive plate	DNK1572
	35	Clamper lever	DNK1573
	36	Clamper cam	DNK1574
	37	Turn drive lever	DNK1577
	38	Clamper holder B	DNK1581
	39	Lever switch (S102) [LOADING POSITION (LPS1, LPS2)]	DSK1003
	40	Screw	PBA-125
	41	Floating screw	PBA1055
	42	Clamper spring T	PBH1016
	43	Steel ball ø4	PBP-001
	44	Floating rubber	PEB1014
	45	Floating rubber	PEB1132
	46	Cushion A	PED1001
	47	Gear pulley	PNW1095
	48	Clamper holder T	PNW1107
	49	Steel ball ø3	PBP-009
	50	Clamp cam	PNW1110
	51	Upper tray	PNW1111
	52	Clamper	PNW1448
	53	Sensor plate	DNK1567
	54	Screw	BMZ26P050FMC
	55	Screw	BMZ26P120FMC
	56	Screw	BPZ20P080FZK
	57	Screw	BBZ30P080FMC
	58	Screw	BSZ26P040FMC
	59	Screw	PMZ20P030FMC
	60	Washer	WA31D054D025
	61	Washer	WA31D054D050
	62	Washer	WT26D047D025
	63	Washer	WT26D054D050
	64	Washer	WT31D054D025
	65	Washer	WT31D054D050
	66	Washer	WT41D065D025
	67	E ring	Z39-010
	68	Washer	PLA1093
	69	Screw	BPZ20P060FMC
	70	Screw	PBA1059
	71	Motor assembly (DISC SELECT)	PEA1248
	72	Motor assembly (EJECT)	PEA1249
	73	Motor assembly (LOADING)	PEA1250
	74	Washer	WT26D047D013
	75	Washer	WT31D054D013
	76	Screw	PDZ30P050FMC
	101	Mechanism board assembly	PWM1383
	102	Sensor board assembly	PWM1689
	103	Servo mechanism assembly M	PXA1417
	104	Link L	DNH1296
	105	Link R	DNH1297
	106	Sensor holder	DNK1576
	107	2mm pitch connector assembly (2P)	PDE1189
	108	Synchro shaft	PLA1085
	109	Main chassis	PNA1886
	110	Link plate	PNA1698
	111	Gear angle	PNB1272
	112	2mm pitch connector assembly (2P)	PDE1120
	113	Guide bar	PLA1086
	114	SM select	PNB1305
	115	Eject lever	PNB1277
	116	Plate holder	PNM1138
	117	Top guide	PNW1951
	118	Center guide	PNW1952
	119	Bottom guide	PNW1953
	120	Side guide L	PNW1954
	121	Side guide R	PNW1955
	122	Sub chassis	DNA1055
	123	Hold plate	DNH1294
	124	2mm pitch connector assembly (5P)	PDE1190
	125	Rubber tube	PEB1030
	126	Motor pulley	PLB-283
	127	Upper chassis	PNA1611
	128	Rubber	PEB1192
	129	Motor (DISC SELECT, LOADING, EJECT)	PXM1002
	130	Connector Ass'y	PDE1191
	131	Spacer	PNM1139

2.3 SERVO MECHANISM ASSEMBLY M

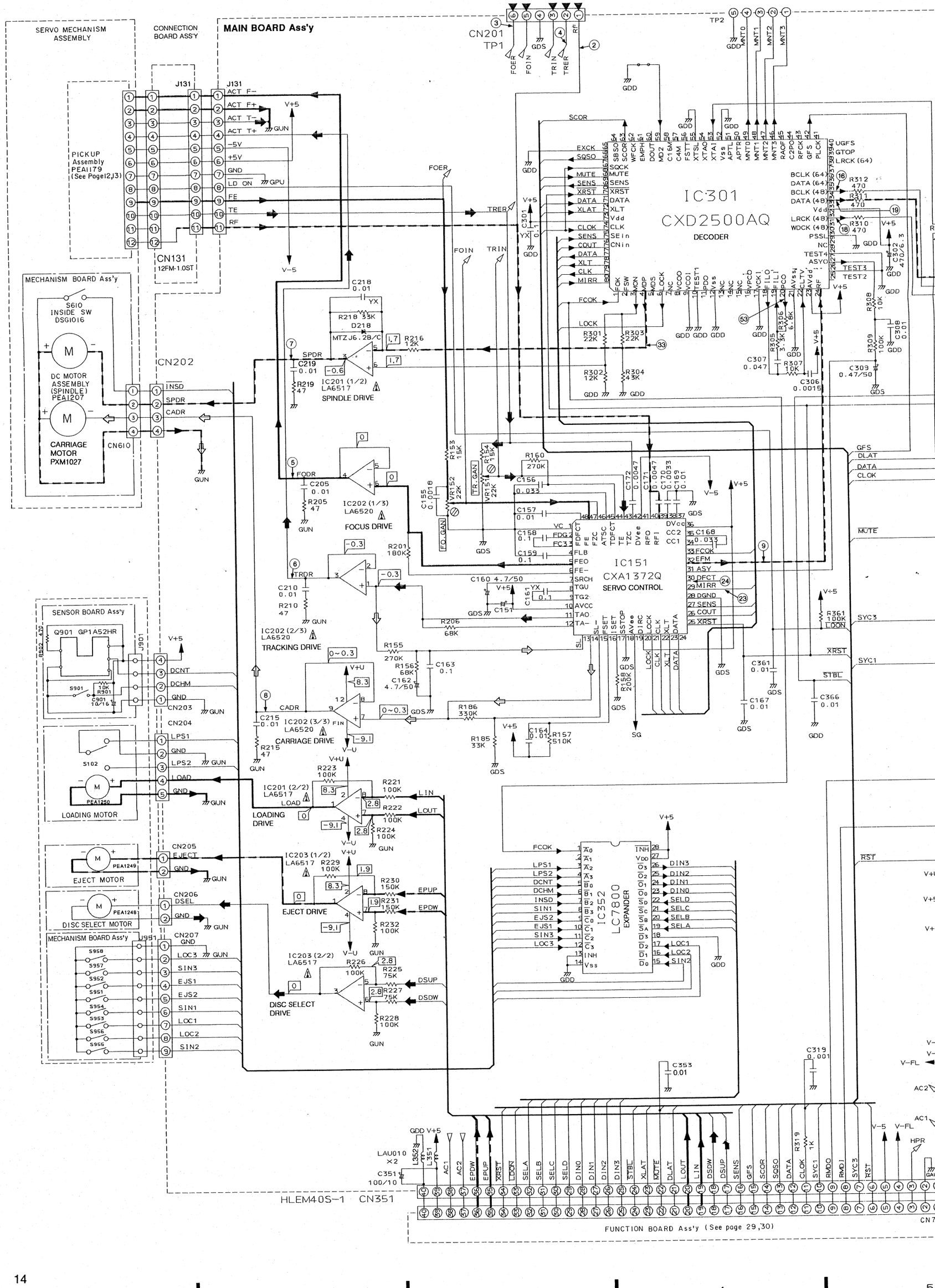
Parts List of Servo mechanism assembly M

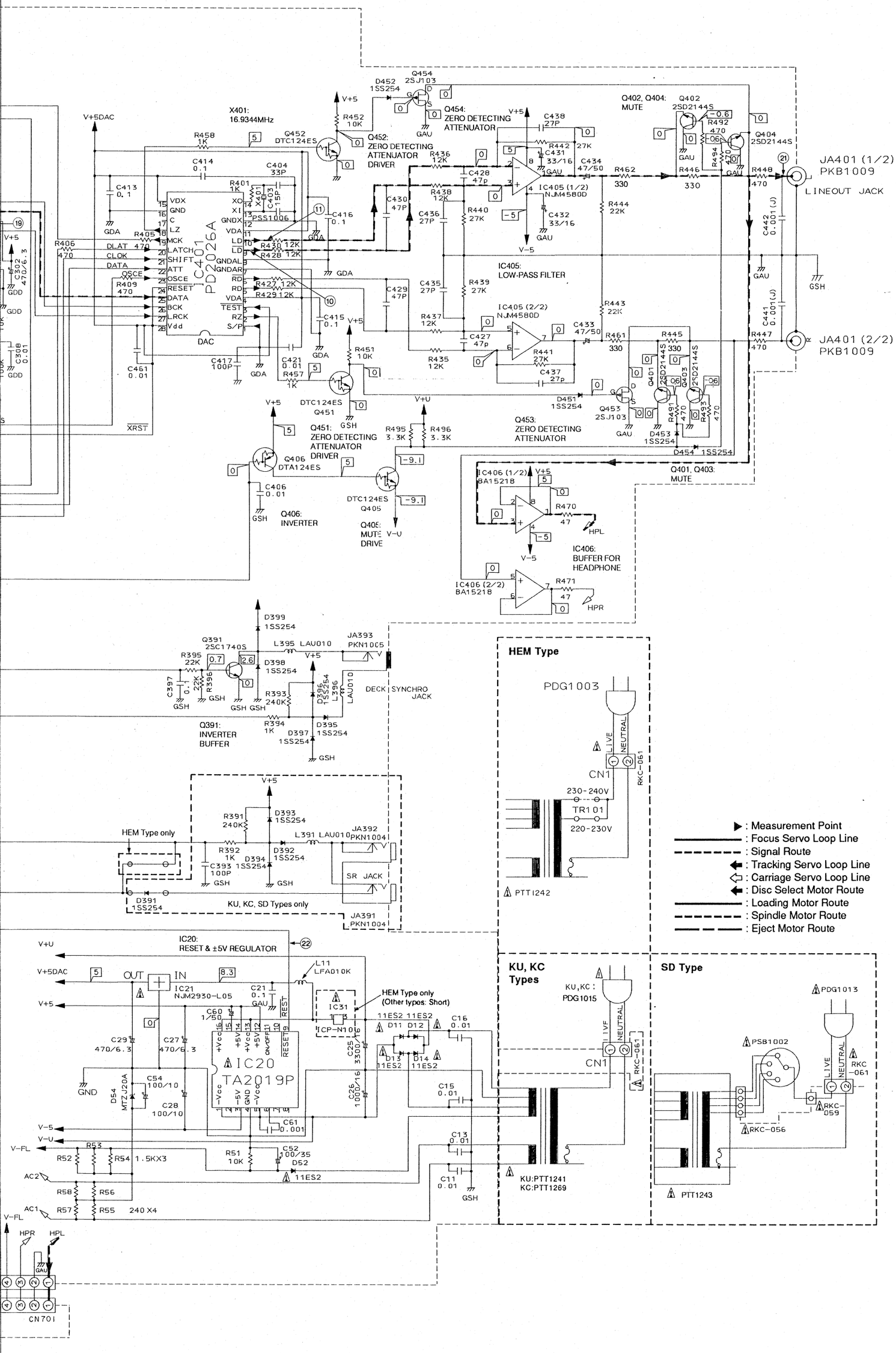
Mark	No.	Description	Part No.
	1	12P F•F•C/30V	PDD1116
	2	• • • • • •	
	3	Earth spring	PBH1132
	4	Guide bar	PLA1094
	5	Disc table	PNW1067
	6	Gear 1	PNW2052
	7	Gear 2	PNW2053
	8	Gear 3	PNW2054
	9	Pinion gear	PNW2055
	10	PWB holder	PNW2057
	11	Carrige DC motor/0.3W	PXM1027
	12	D.C motor assembly (spindle with oil)	PEA1207
	13	Pickup assembly	PEA1179
	14	Disc table assembly	PEA1035
	15	Screw	BBZ26P060FMC
	16	Screw	BPZ20P060FMC
	17	Screw	BPZ26P100FMC
	18	Screw	JFZ17P025FZK
	19	Screw	JFZ20P040FMC
	20	Washer	WT12D032D025
	101	Mechanism board assembly	PWX1192
	102	Earth lead unit	PDF1118
	103	Clamp magnet	PMF1014
	104	Gear stopper	PNB1303
	105	Yoke M	PNB1312
	106	AV angle	PNB1405
	107	Carrige base	PNW2058

*1: Fix the motors 11 and 12 on the mechanism board assembly (101) so that the label attached on the motor faces the direction illusted.



4.2 MAIN BOARD Ass'y





IC20
(TA2019P)

Pin No.	Voltage	Pin No.	Voltage
1	−9.1	9	5
2	0	10	1.1
3	−5	11	0.6
4	0	12	5
5	−9.1	13	8.3
6	−7.2	14	5
7	3.3	15	1.2
8	1.1	16	8.3

IC151
(CXA1372Q)

Pin No.	Voltage	Pin No.	Voltage
1	0	25	5
2	0	26	0
3	0	27	5
4	0	28	0
5	−0.3	29	0
6	0	30	−5
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	−1.5
11	0	35	−1.7
12	0	36	5
13	0	37	−0.7
14	0 to 0.3	38	−1.6
15	0	39	0
16	−4	40	0.8
17	1.3	41	−5
18	0	42	0
19	−5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC301
(CXD2500AQ)

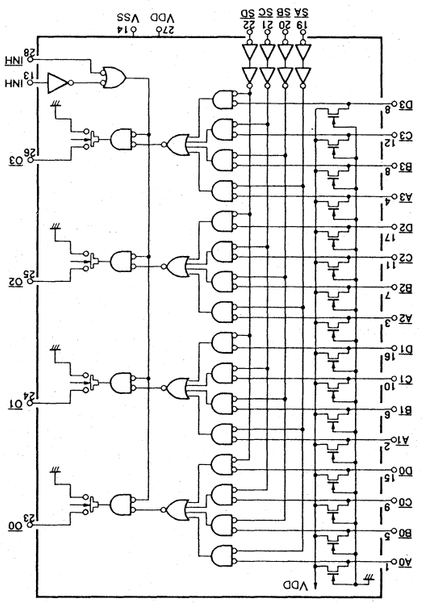
Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0 to 0.3
10	0	50	1.2
11	2.1	5	1.2
12	0	52	0
13	1	53	2.5
14	0.9 to 1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3 to 4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1 to 3
30	0	70	5
31	1.3 to 2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC352
(LC7800)

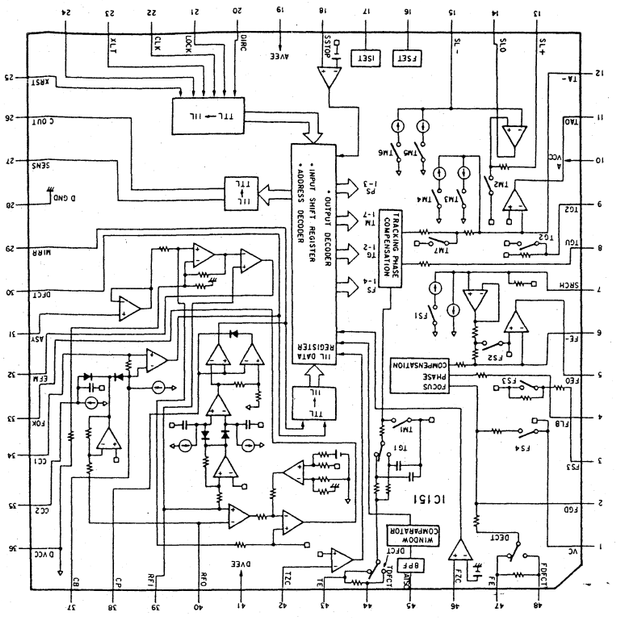
Pin No.	Voltage	Pin No.	Voltage
1	5	15	5
2	5	16	5
3	0	17	0
4	5	18	5
5	5	19	5
6	5	20	5
7	5	21	0
8	0	22	5
9	0	23	0
10	0	24	0
11	5	25	5
12	5	26	5
13	0	27	5
14	0	28	5

IC401
(PD2026A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	0	16	0
3	5	17	5
4	5	18	0
5	2.4	19	2
6	2.6	20	5
7	0	21	5
8	0	22	5
9	2.6	23	5
10	2.4	24	5
11	5	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5



● IC352: LC7800

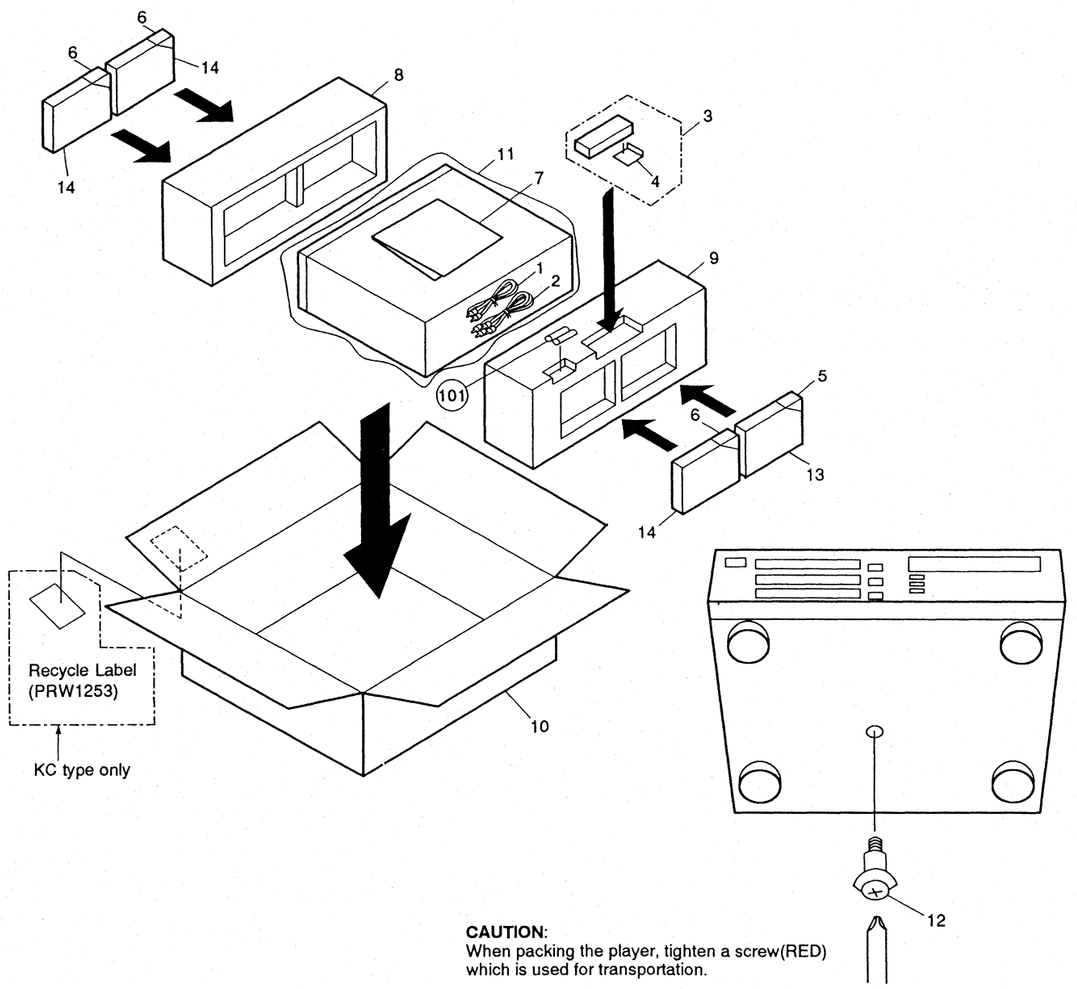


● IC151: CXA1372Q

3. PACKING

Parts List

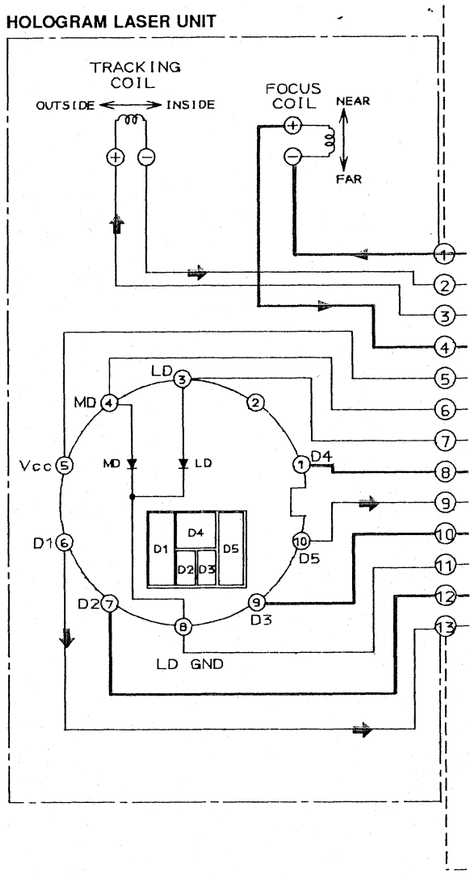
Mark	No.	Description	Part No.
	1	Connection code with mini plug	PDE-319
	2	Connection code with pin plug	PDE1001
	3	Remote control unit	PWW1073
	4	Battery cover	PZN1001
	5	Single magazine assembly	PXA1386
	6	Magazine assembly	PXA1308
	7	Instruction manual (English)	PRB1172
	8	Protector F	PHA1161
	9	Protector R	PHA1162
	10	CD packing case	PHG1818
	11	Mirror mat sheet	Z23-031
	12	Screw (RED)	PBA1060
	13	PP case	PYY1159
	14	PP case	PYY1141
	101	Dry cell battery (R03, AAA)	VEM-022

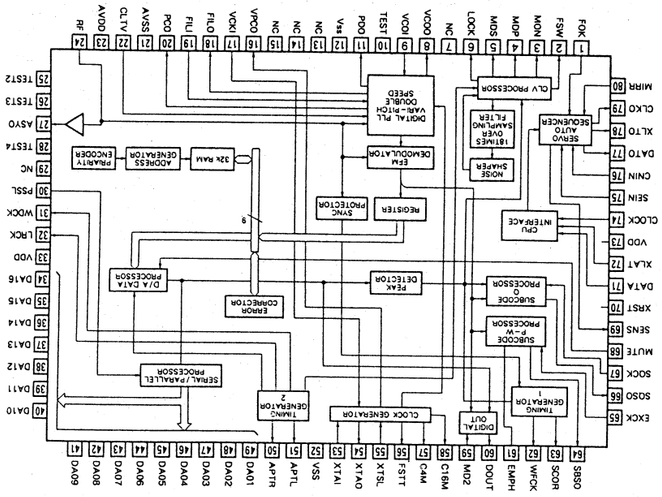


CAUTION:
When packing the player, tighten a screw(RED) which is used for transportation.

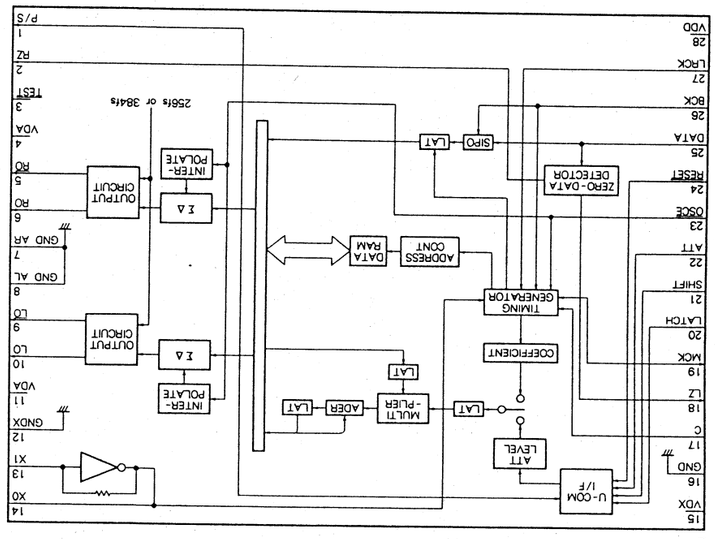
4. SCHEMATIC AND P.C.

4.1 PICKUP ASSEMBLY




RF AVDD GLTV AVSS PCO FIL FILO VCKI VCKO NC NC NC Vss PDO TEST VCO2 VCO NC LOCK MDS MDP MON FSW FOK
TEST2 TEST3 ASYO TEST4 NC PSSL WDCK LRCK VDD DA16 DA15 DA14 DA13 DA12 DA11 DA10
DA09 DA08 DA07 DA06 DA05 DA04 DA03 DA02 DA01 APTR APTL VSS XTAI XTAO XTSL FSTT C4M C16M M02 DOUT EMPH WFCK SCOR SBSO
MIRR CLKO XLTO DATO CNIN SEIN CLOCK VDD XLAT DATA XRST SENS MUTE SOCK SOSO EXCK
CLV PROCESSOR
DIGITAL PLL VARI-PITCH DOUBLE SPEED
SERVO AUTO SEQUENCER
18TIMES OVER SAMPLING FILTER
NOISE SHAPER
EFM DEMODULATOR
SYNC PROTECTOR
REGISTER
CPU INTERFACE
PEAK DETECTOR
SUBCODE Q PROCESSOR
SUBCODE P-W PROCESSOR
TIMING GENERATOR
DIGITAL OUT
CLOCK GENERATOR
TIMING GENERATOR 2
ERROR CORRECTOR
D/A DATA PROCESSOR
SERIAL/PARALLEL PROCESSOR
32K RAM
ADDRESS GENERATOR
PARITY ENCODER

● IC301: CXD2500AQ



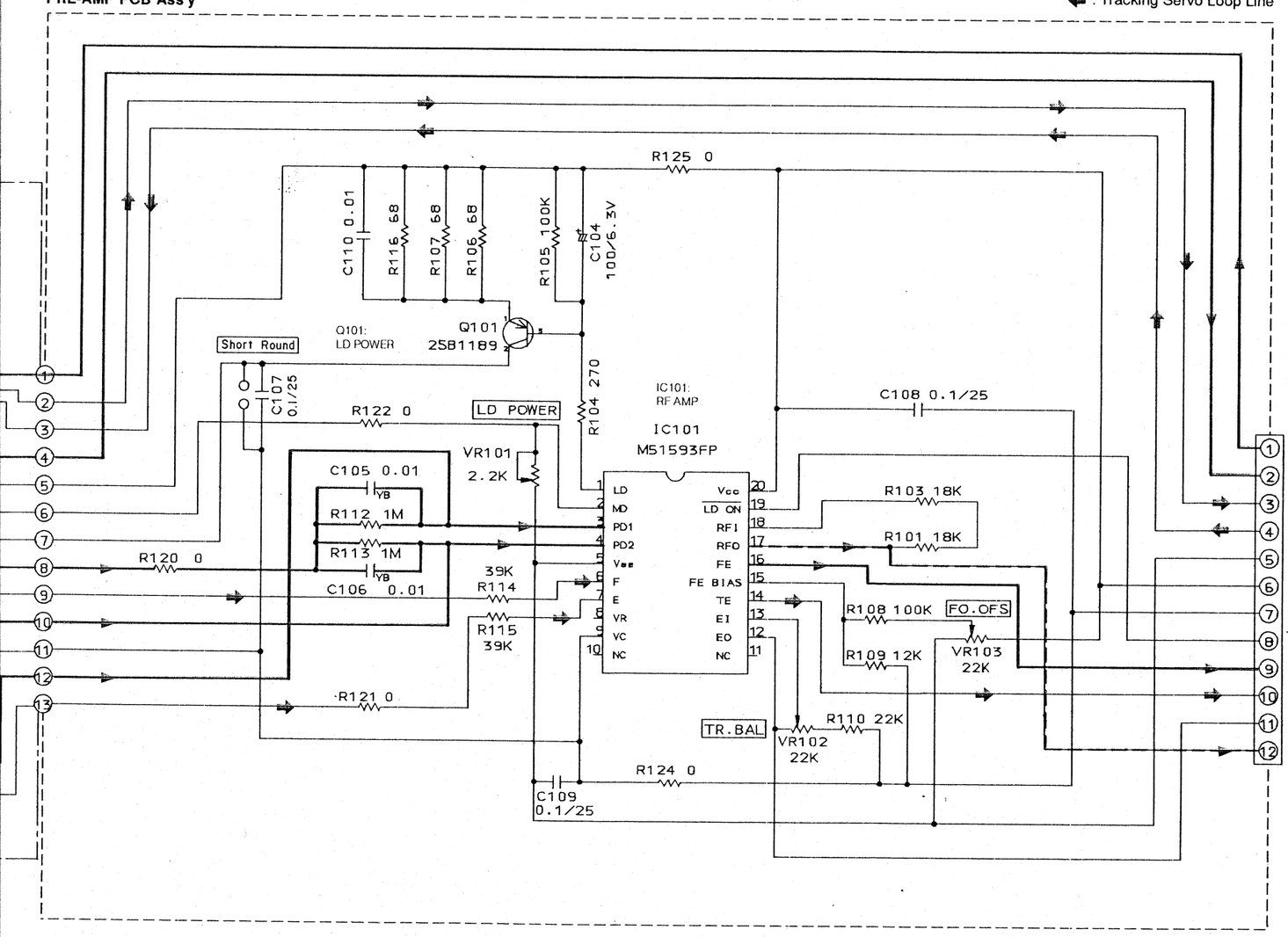
● IC401: PD2026A

IC Block Diagrams

P.C. BOARDS CONNECTION DIAGRAM

: Focus Servo Loop Line
: Signal Route
: Tracking Servo Loop Line

PRE-AMP PCB Ass'y



1. RESISTORS:
   Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance uniess otherwise noted k;kΩ, M;MΩ, (F);±1%, (G);±2%, (K);±10%, (M);±20% tolerance.
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p;pF. Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE CURRENT:
   ⌐ ;DC voltage (V) at play state.
   ⇦ mA;DC current at play state.
   ;Value in ( ) is DC current at stop state.
4. OTHERS:
   ➡ ;Signal route.
   ⊘ ; Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   * marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due improvements in design.

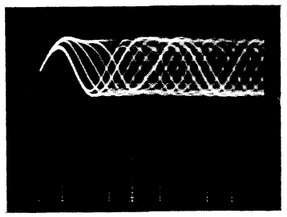
Waveforms

Note: The encircled numbers denote measuring points in the schematic diagram.

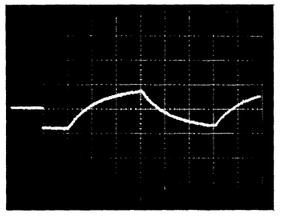
*1 50T-JUMP: After switching to the pause mode, press the manual search key.
*2 FOCUS-IN: Press the key without loading a disc.

*3 POWER ON : Plug AC cord into AC wall socket.
*4 POWER OFF: Unplug AC cord from AC wall socket.

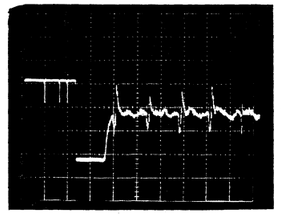
(2) TP1-Pin 1: PLAY MODE
(RF)
500mV/div 500nsec/div



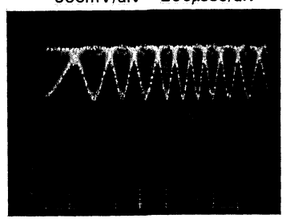
(5) IC202-Pin 4: FOCUS-IN (*2) MODE
(FODR)
1V/div 200msec/div



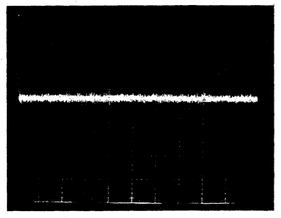
(7) IC201-Pin 3: TRACK SEARCH MODE
(SPDR)
2V/div 50msec/div



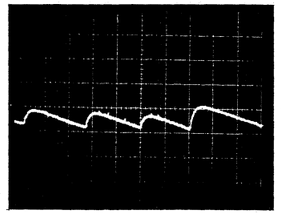
(2) TP1-Pin 1: TRACK SEARCH MODE
(RF)
500mV/div 200μsec/div



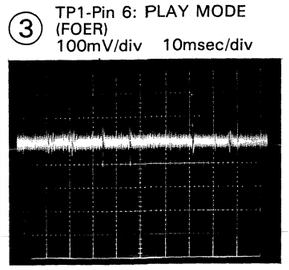
(5) IC202-Pin 4: PLAY MODE
(FODR)
1V/div 1msec/div



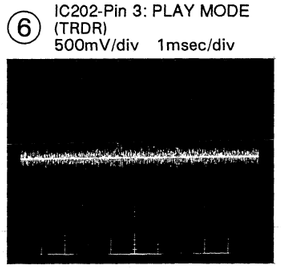
(8) IC202-Pin 9: PLAY MODE
(CADR)
1V/div 2S/div



(3) TP1-Pin 6: PLAY MODE
(FOER)
100mV/div 10msec/div

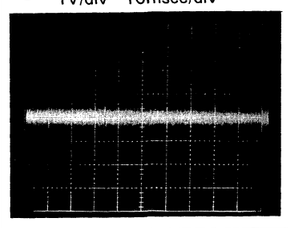


(6) IC202-Pin 3: PLAY MODE
(TRDR)
500mV/div 1msec/div

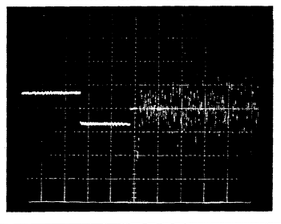


(8) IC202-Pin 9: TRACK SEARCH MODE
(CADR)
2V/div 200msec/div

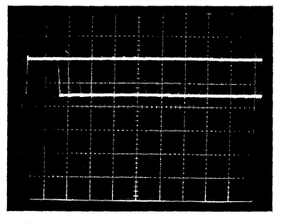
(4) TP1-Pin 2: PLAY MODE
(TRER)
1V/div 10msec/div



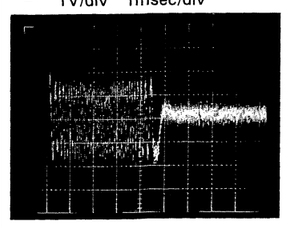
(6) IC202-Pin 3: 50T-JUMP (*1) MODE
(TRDR)
500mV/div 1msec/div



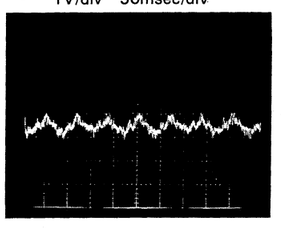
(9) IC151-Pin 32: PLAY MODE
(EFM)
2V/div 500nsec/div



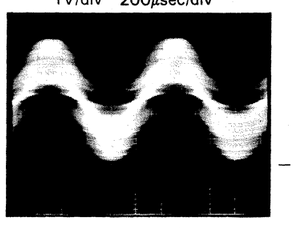
(4) TP1-Pin 2: 50T-JUMP (*1) MODE
(TRER)
1V/div 1msec/div



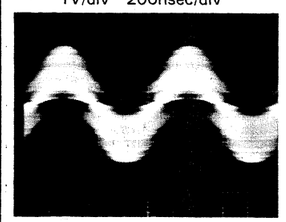
(7) IC201-Pin 3: PLAY MODE
(SPDR)
1V/div 50msec/div



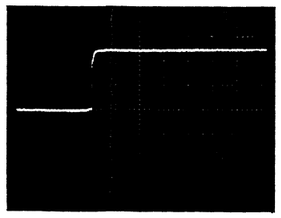
(10) IC401-Pin 9: PLAY MODE (1kHz)
(LO) (D/A DATA OUT)
1V/div 200μsec/div



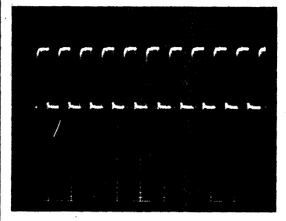
(11) IC401-pin 10: PLAY MODE (1kHz)
(LO)
1V/div 200nsec/div



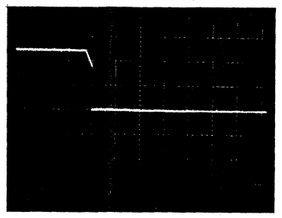
(22) IC20-Pin 9: POWER ON (*3)
(RST)
2V/div 100msec/div



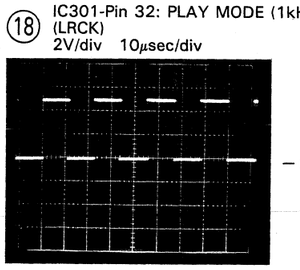
(16) IC301-Pin 35: PLAY MODE (1kHz)
(BCLK)
2V/div 500nsec/div



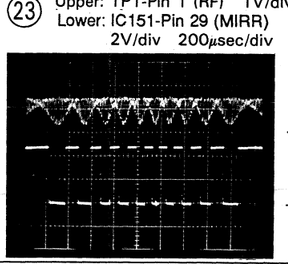
(22) IC20-Pin 9: POWER OFF (*4)
(RST)
2V/div 100msec/div



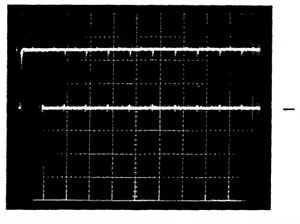
(18) IC301-Pin 32: PLAY MODE (1kHz)
(LRCK)
2V/div 10μsec/div



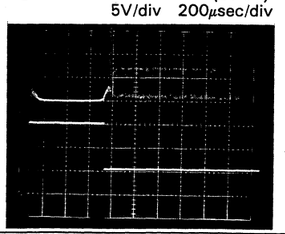
(23) : TRACK SEARCH MODE
Upper: TP1-Pin 1 (RF) 1V/div
Lower: IC151-Pin 29 (MIRR)
2V/div 200μsec/div



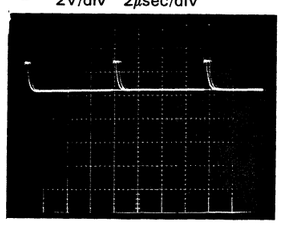
(19) IC301-Pin 34: PLAY MODE (1kHz)
(DATA)
2V/div 500nsec/div



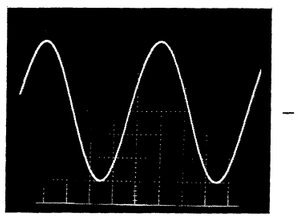
(24) : PLAY MODE
Upper: TP1-Pin 1 (RF) 1V/div
Lower: IC151-Pin 30 (DFCT)
5V/div 200μsec/div



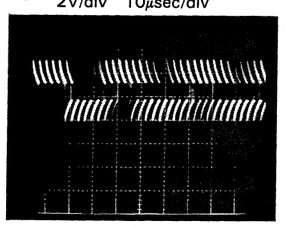
(33) IC301-Pin 4: PLAY MODE
(MDP)
2V/div 2μsec/div



(21) Pin -OUTPUT: PLAY MODE (1kHz)
1V/div 200μsec/div



(53) IC301-Pin 20: PLAY MODE
(PCO)
2V/div 10μsec/div



4.3 P. C. BOARDS CONNECTIONS DIAGRAMS

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode	SA		Styrol capacitor
			NP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

Voltages

Note: The voltages (V) are at the PLAY state.

IC20
(TA2019P) *1

Pin No.	Voltage	Pin No.	Voltage
1	– 9.1	9	5
2	0	10	1.1
3	– 5	11	0.6
4	0	12	5
5	– 9.1	13	8.3
6	– 7.2	14	5
7	3.3	15	1.2
8	1.1	16	8.3

IC151
(CXA1372Q) *2

Pin No.	Voltage	Pin No.	Voltage
1	0	25	5
2	0	26	0
3	0	27	5
4	0	28	0
5	– 0.3	29	0
6	0	30	– 5
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	– 1.5
11	0	35	– 1.7
12	0	36	5
13	0	37	– 0.7
14	0 to 0.3	38	– 1.6
15	0	39	0
16	– 4	40	0.8
17	1.3	41	– 5
18	0	42	0
19	– 5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC202
(LA6520) *3

Pin No.	Voltage	Pin No.	Voltage
1	– 0.3	8	0 to 0.3
2	– 0.3	9	0 to 0.3
3	– 0.3	10	0
4	0	11	0
5	0	12	8.3
6	0	Fin	– 9.1
7	0 to 0.3		

IC301
(CXD2500AQ) *4

Pin No.	Voltage	Pin No.	Voltage
1	5	41	2.5
2	2.1	42	5
3	5	43	2.5
4	2.6	44	0
5	2.2	45	5
6	5	46	4.4
7	0	47	0
8	5	48	0
9	0	49	0 to 0.3
10	0	50	1.2
11	2.1	5	1.2
12	0	52	0
13	1	53	2.5
14	0.9 to 1.3	54	2.5
15	0	55	0
16	2	56	2.9
17	0	57	2.5
18	2.5	58	2.5
19	2.4	59	0
20	2.4	60	0
21	0	61	0
22	2.5	62	2.5
23	5	63	0
24	2.5	64	0
25	0.2	65	0
26	0	66	3.3 to 4.6
27	2.5	67	5
28	0	68	0
29	0	69	2.1 to 3
30	0	70	5
31	1.3 to 2.2	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	2.5	76	0
37	2.5	77	5
38	2.5	78	5
39	0	79	5
40	5	80	0

IC352
(LC7800) *5

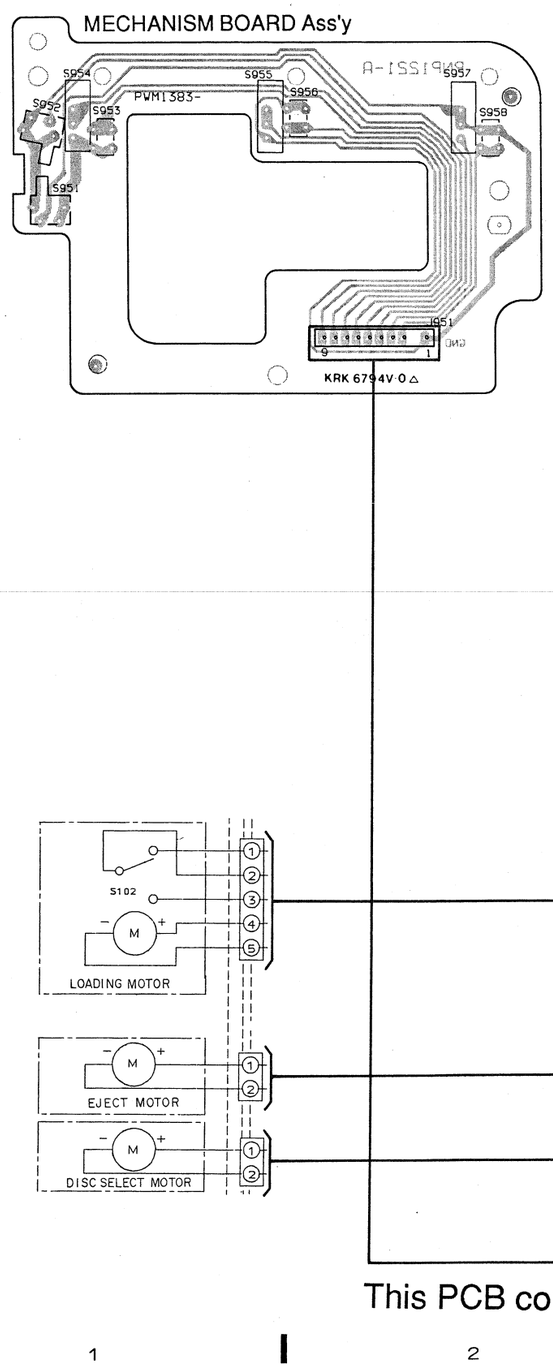
Pin No.	Voltage	Pin No.	Voltage
1	5	15	5
2	5	16	5
3	0	17	0
4	5	18	5
5	5	19	5
6	5	20	5
7	5	21	0
8	0	22	5
9	0	23	0
10	0	24	0
11	5	25	5
12	5	26	5
13	0	27	5
14	0	28	5

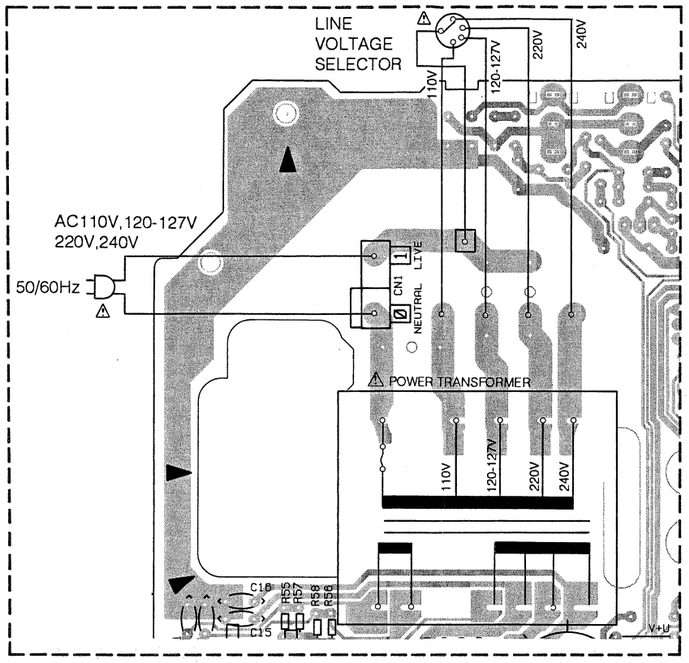
IC401
(PD2026A) *6

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	0	16	0
3	5	17	5
4	5	18	0
5	2.4	19	2
6	2.6	20	5
7	0	21	5
8	0	22	5
9	2.6	23	5
10	2.4	24	5
11	5	25	2.4
12	0	26	2.4
13	2.4	27	2.4
14	2.4	28	5

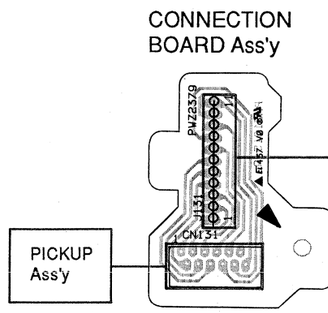
IC751
(PD4408A) *7

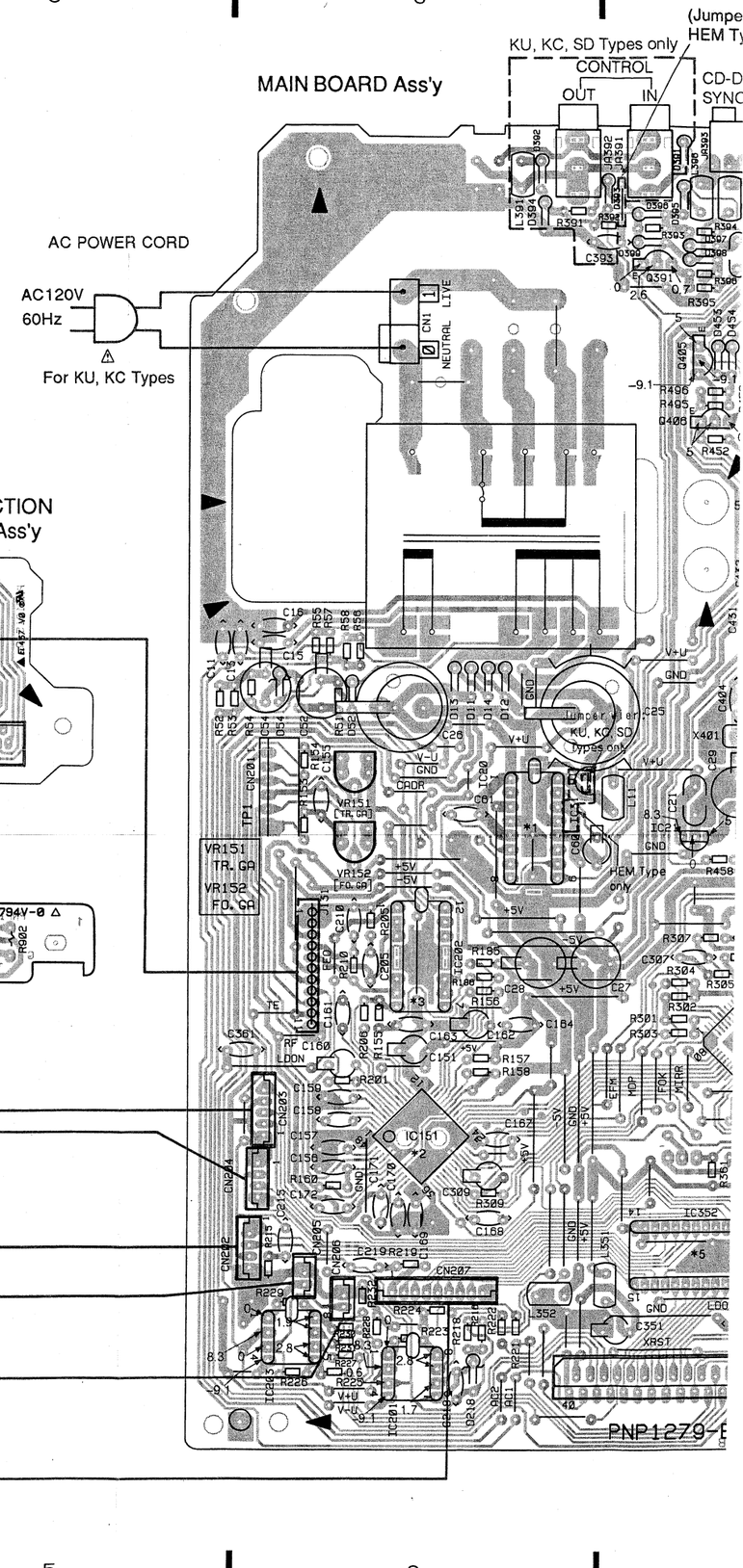
Pin No.	Voltage	Pin No.	Voltage
1	– 12.8	33	0
2	– 15 to – 20	34	4.6
3	– 8 to – 23	35	0
4	– 8 to – 23	36	0
5	5	37	0
6	5	38	0
7	5	39	5
8	3.9 to 4.7	40	– 1.8
9	5	41	– 1.2
10	5	42	– 25.7
11	5	43	– 25.7
12	4.7	44	– 25.7
13	5	45	– 25.7
14	5	46	– 25.7
15	5	47	– 25.7
16	5	48	– 25.7
17	5	49	– 25.7
18	0	50	5
19	5	51	5
20	5	52	5
21	5	53	5
22	5	54	– 6
23	0	55	– 3 to – 7
24	0	56	– 28.9
25	5	57	– 5
26	1.8 to 2.1	58	– 9.5
27	5	59	– 10.5
28	5	60	– 8 to – 23
29	0	61	– 2 to – 8
30	2.3	62	– 2 to – 8
31	2.5	63	– 2 to – 23
32	0	64	5

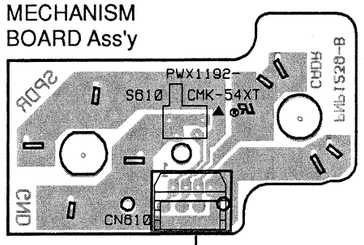


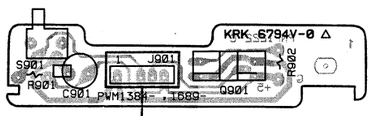


NOTE: For the power supply section for HEM type, refer to page 77.

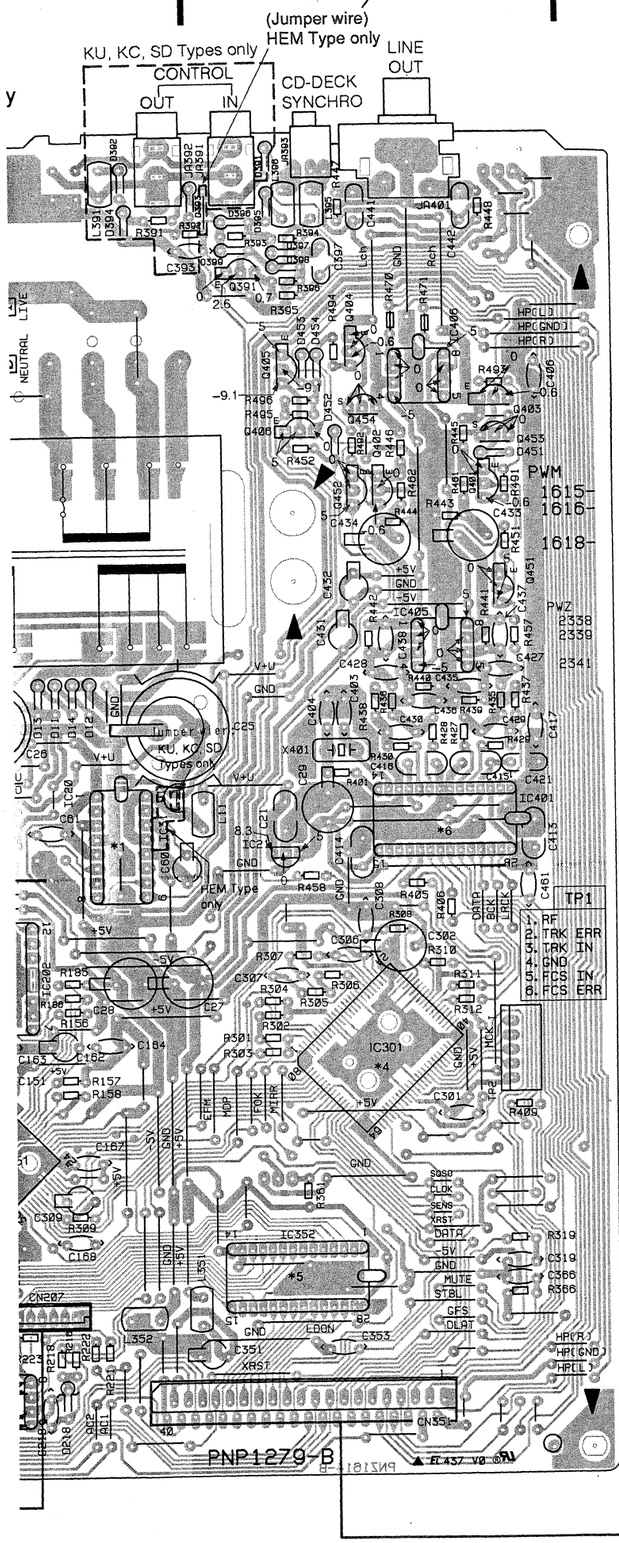


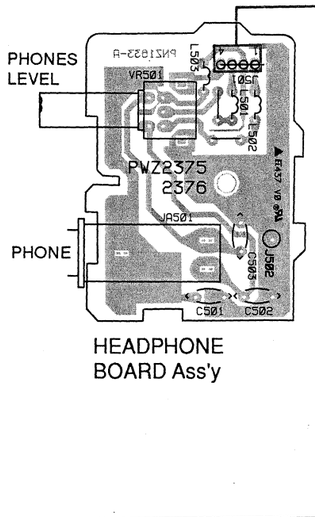


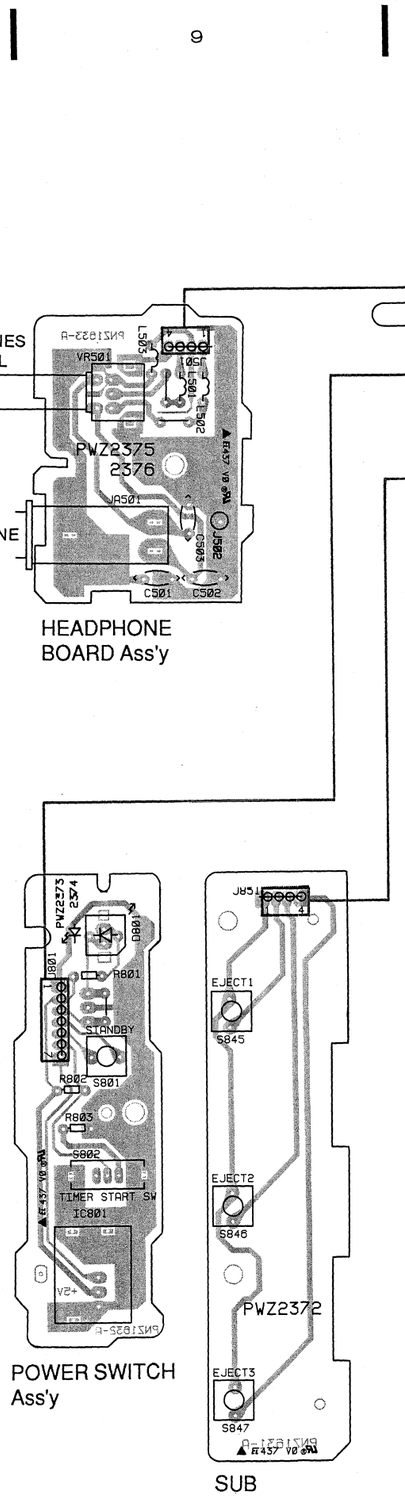


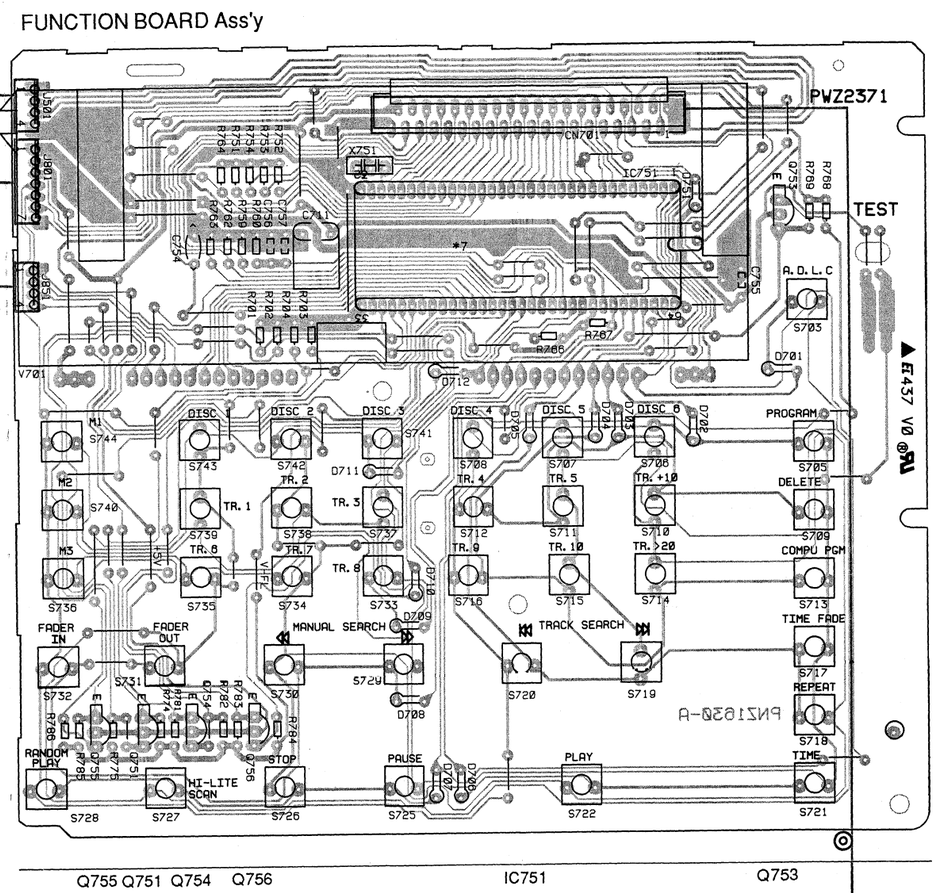


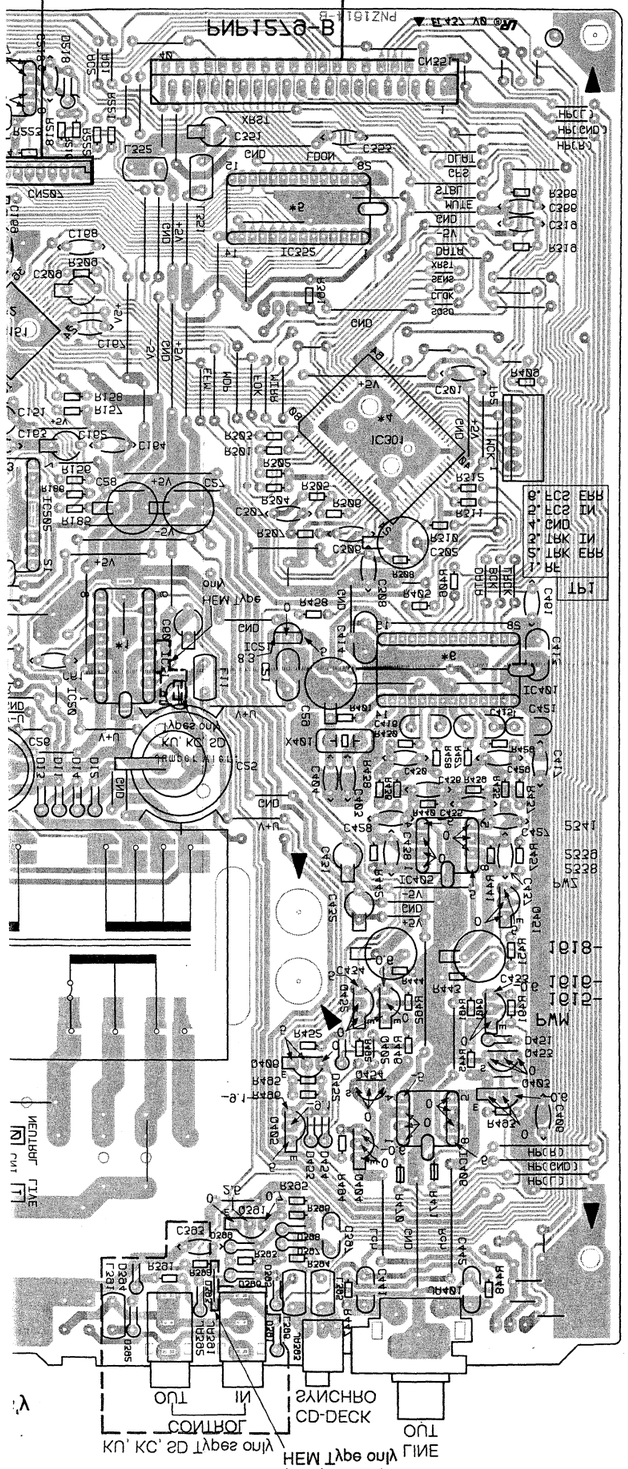
This PCB connection diagram is viewed from the parts mounted side.

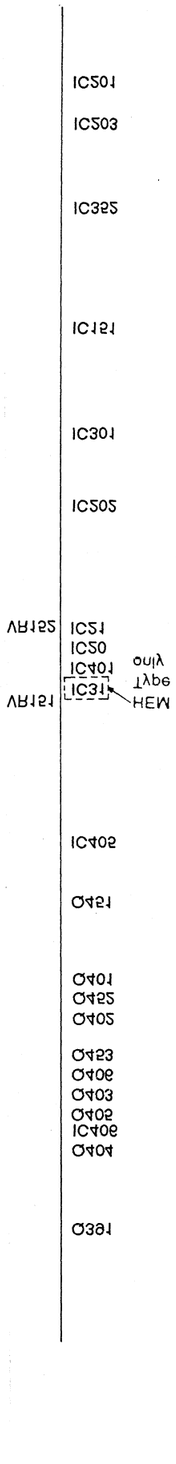

KU, KC, SD Types only
(Jumper wire)
HEM Type only
CONTROL
OUT
IN
CD-DECK
SYNCHRO
LINE
OUT
LIVE
NEUTRAL
PWM
1615
1616
1618
PWZ
2338
2339
2341
IC405
IC406
IC401
IC20
IC21
IC202
IC301
IC151
IC352
IC203
IC201
Q391
Q404
Q405
Q403
Q406
Q453
Q402
Q452
Q401
Q451
VR151
VR152
IC31
HEM Type only
TP1
RF
TRK ERR
TRK IN
GND
FCS IN
FCS ERR
HEM Type only
Jumper wire
KU, KC, SD Types only
PNP1279-B


PHONES LEVEL
VR501
PWZ2375
2376
JA501
PHONE
CS01
CS02
HEADPHONE BOARD Ass'y


PWZ2375
2374
POWER SWITCH Ass'y
EJECT1
EJECT2
EJECT3
S845
S846
S847
PWZ2372
SUB FUNCTION BOARD Ass'y


FUNCTION BOARD Ass'y
PWZ2371
TEST
PROGRAM
DELETE
COMPU PGM
TIME FADE
REPEAT
TIME
FADER IN
FADER OUT
MANUAL SEARCH
TRACK SEARCH
RANDOM PLAY
HI-LITE SCAN
STOP
PAUSE
PLAY
Q755 Q751 Q754 Q756
IC751
Q753


MAIN ASS'Y
KU, KC, SD Types only
HEM Type only
(Number write)
LINE
OUT
CD-DECK
SYNCHRO
IN
OUT
CONTROL


IC501
IC503
IC325
IC121
IC301
IC505
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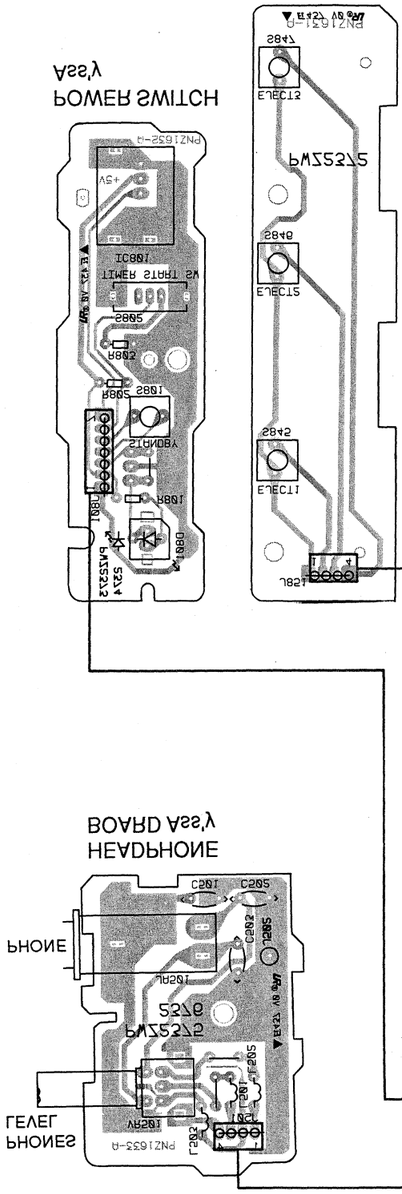
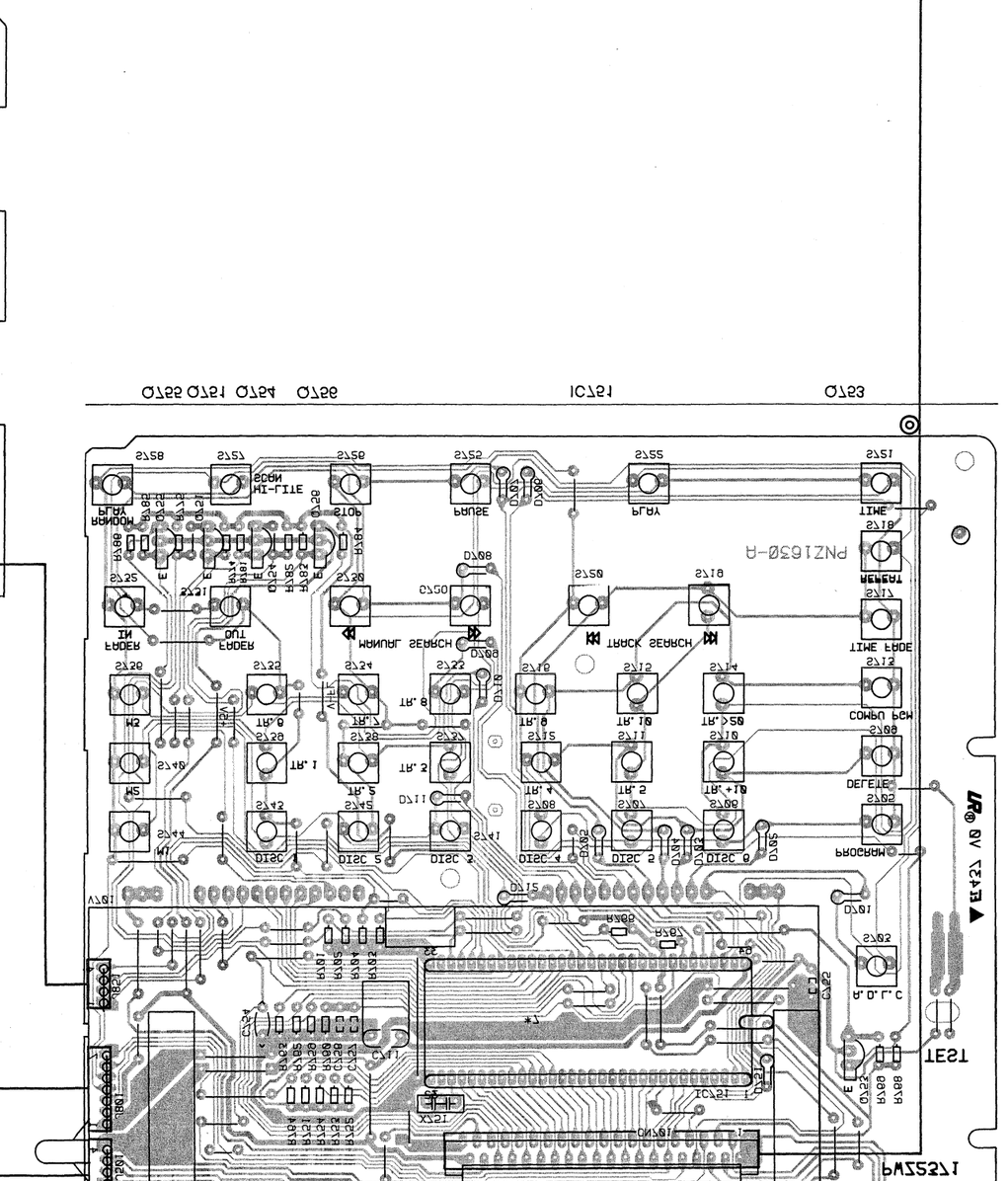
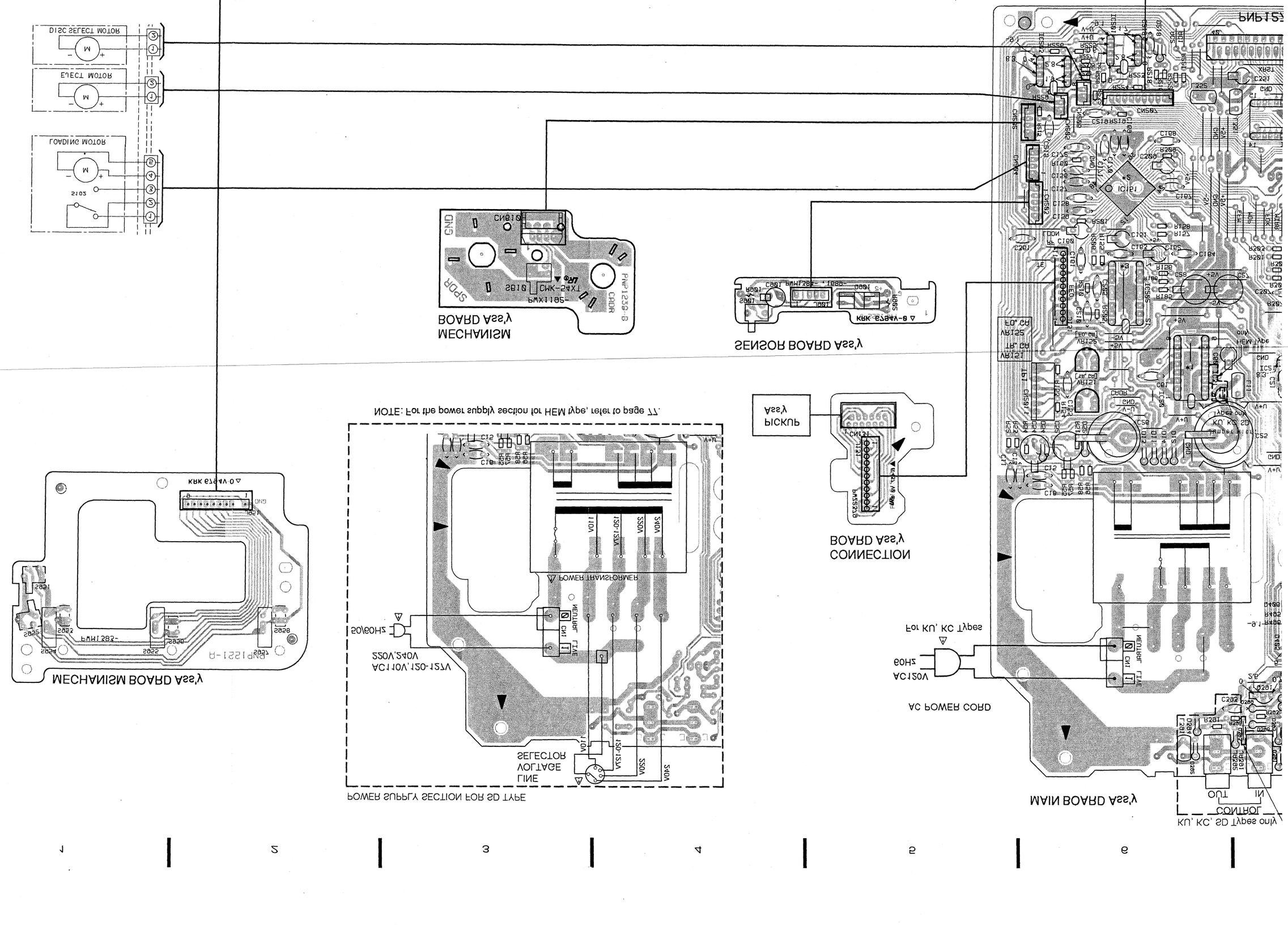
IC1000


POWER SW'TCH
ASS'Y
PNZ1632-A
PHONE
PHONES
LEVEL
HEADPHONE
BOARD ASS'Y

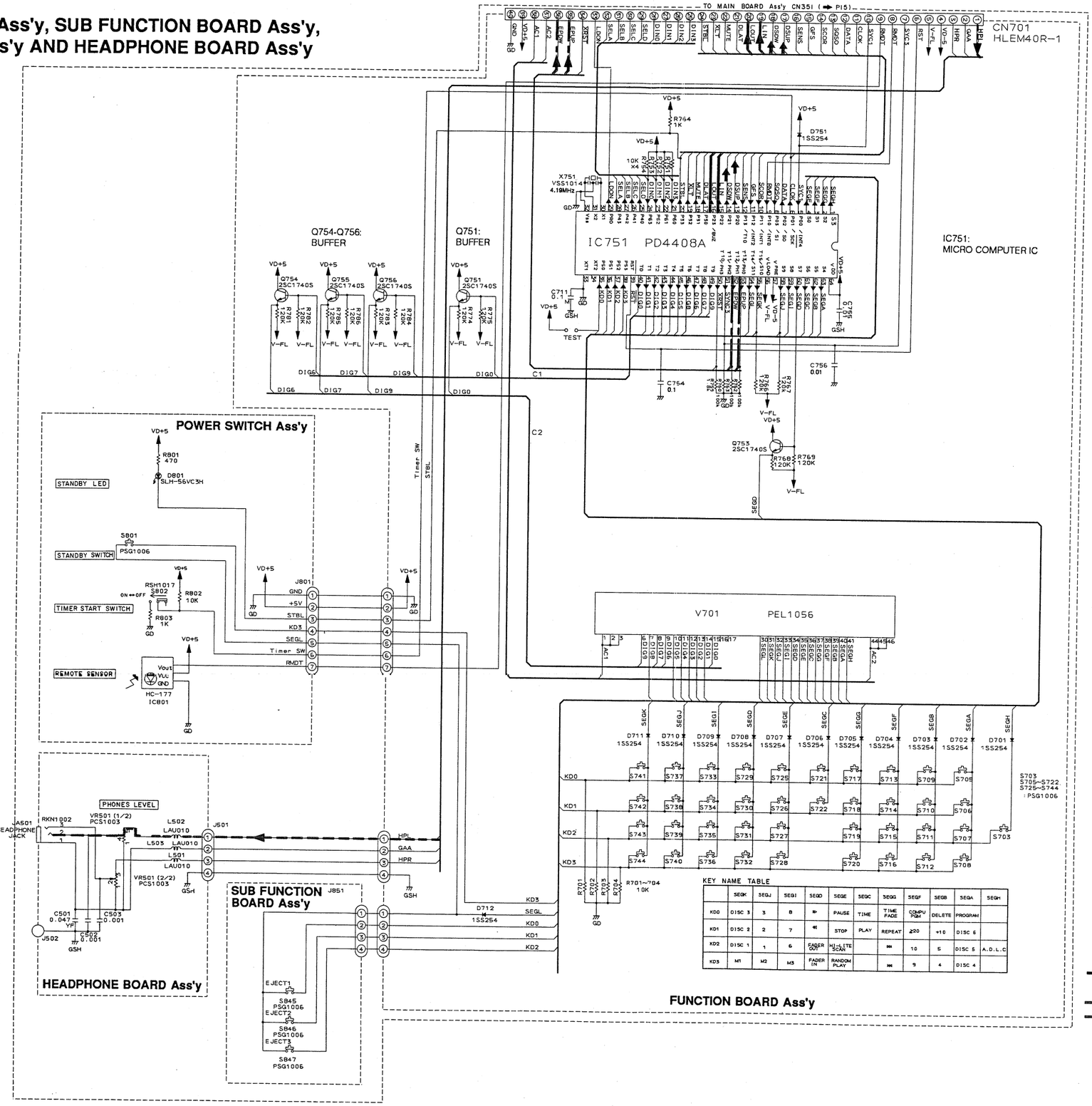
SUB
FUNCTION
BOARD
ASS'Y
PNZ1631-A


IC121
PNZ1630-A
TEST
FUNCTION BOARD ASS'Y

This PCB connection diagram is viewed from the foil side.



4.4 FUNCTION BOARD Ass'y, SUB FUNCTION BOARD Ass'y, POWER SWITCH Ass'y AND HEADPHONE BOARD Ass'y



	SEGK	SEGJ	SEGI	SEGD	SEGE	SEGC	SEGG	SEGF	SEGB	SEGA	SEGH
KD0	DISC 3	3	8	▶▶	PAUSE	TIME	TIME FADE	COMPU PGM	DELETE	PROGRAM	
KD1	DISC 2	2	7	◀◀	STOP	PLAY	REPEAT	≥20	+10	DISC 6	
KD2	DISC 1	1	6	FADER OUT	H.L.LITE SCAN		M	10	5	DISC 5	A.D.L.C
KD3	M1	M2	M3	FADER IN	RANDOM PLAY		M	9	4	DISC 4	

IC751
(PD4408A)

Pin No.	Voltage	Pin No.	Voltage
1	– 12.8	33	0
2	– 15 to – 20	34	4.6
3	– 8 to – 23	35	0
4	– 8 to – 23	36	0
5	5	37	0
6	5	38	0
7	5	39	5
8	3.9 to 4.7	40	– 1.8
9	5	41	– 1.2
10	5	42	– 25.7
11	5	43	– 25.7
12	4.7	44	– 25.7
13	5	45	– 25.7
14	5	46	– 25.7
15	5	47	– 25.7
16	5	48	– 25.7
17	5	49	– 25.7
18	0	50	5
19	5	51	5
20	5	52	5
21	5	53	5
22	5	54	– 6
23	0	55	– 3 to – 7
24	0	56	– 28.9
25	5	57	– 5
26	1.8 to 2.1	58	– 9.5
27	5	59	– 10.5
28	5	60	– 8 to – 23
29	0	61	– 2 to – 8
30	2.3	62	– 2 to – 8
31	2.5	63	– 2 to – 23
32	0	64	5

5. PCB PARTS LIST

NOTES:

- *Part without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω → 56 × 10¹ → 561 ..... RD1/8PM 5 6 1 J
47kΩ → 47 × 10³ → 473 ..... RD1/4PS 4 7 3 J
0.5Ω → 0R5 ..... RN2H 0 R 5 K
1Ω → 010 ..... RS1P 0 1 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ → 562 × 10¹ → 5621 ..... RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
◉		MOTHER BOARD Ass'y	PWM1615
		├ MAIN BOARD Ass'y	
		└ CONNECTION BOARD Ass'y	
◉		SUB BOARD Ass'y	PWM1620
		├ FUNCTION BOARD Ass'y	
		├ SUB FUNCTION BOARD Ass'y	
		├ POWER SWITCH Ass'y	
		└ HEADPHONE BOARD Ass'y	
		MECHANISM BOARD Ass'y	
		SENSOR BOARD Ass'y	
		MECHANISM BOARD Ass'y	
MAIN BOARD Ass'y			
SEMICONDUCTORS			
⚠	IC20	REGULATOR IC	TA2019P
⚠	IC21	REGULATOR,IC	NJM2930L05
	IC151	SERVO IC	CXA1372Q
⚠	IC201	POWER OP-AMP,IC	LA6517
⚠	IC202	POWER OP-AMP,IC	LA6520
⚠	IC203	POWER OP-AMP,IC	LA6517
	IC301	EFM DEMODULATION IC	CXD2500AQ
	IC352	C-MOS IC	LC7800
	IC401	D/A CONVERTER,IC	PD2026A
	IC405	OP-AMP IC	NJM4580D
	IC406	OP-AMP IC	BA15218
	Q391	TRANSISTOR	2SC1740S
	Q401-404	TRANSISTOR	2SD2144S
	Q405,406	TRANSISTOR	DTC124ES
	Q451,452	TRANSISTOR	DTC124ES
	Q453,454	P-FET	2SJ103
⚠	D11-14	DIODE	11ES2
⚠	D52	DIODE	11ES2
	D54	ZENER DIODE	MTZJ20A
	D218	ZENNER DIODE	MTZJ6.2B
	D391-397	DIODE	1SS254
	D451-454	DIODE	1SS254

Mark	No.	Description	Part No.
COLIS			
	L11	RADIAL INDUCTOR	LFA010K
	L351,352	AXIAL INDUCTOR	LAU010K
	L391,395	AXIAL INDUCTOR	LAU010K
	L396	AXIAL INDUCTOR	LAU010K
CAPACITORS			
	C11,13	CERAMIC CAPACITOR	CKCYF103Z50
	C15,16	CERAMIC CAPACITOR	CKCYF103Z50
	C21	MYLAR FILM CAPACITOR	CQMA104K50
	C25	ELECTR.CAPACITOR	CEAS332M16
	C26	ELECTR.CAPACITOR	CEAS102M16
	C27	ELECTR.CAPACITOR	CEAS471M6R3
	C28	ELECTR.CAPACITOR	CEAS101M10
	C29	ELECTR.CAPACITOR	CEAS471M6R3
	C52	ELECTR.CAPACITOR	CEAS101M35
	C54	ELECTR.CAPACITOR	CEAS470M35
	C60	ELECTR.CAPACITOR	CEAS010M50
	C61	CERAMIC CAPACITOR	CGCYX102K25
	C151	ELECTR.CAPACITOR	CEAS101M10
	C155	CERAMIC CAPACITOR	CKCYB182K50
	C156	CERAMIC CAPACITOR	CGCYX333K25
	C157	CERAMIC CAPACITOR	CGCYX103K25
	C158,159	CERAMIC CAPACITOR	CGCYX104K25
	C160	ELECTR.CAPACITOR	CEAS4R7M50
	C161	CERAMIC CAPACITOR	CGCYX104K25
	C162	ELECTR.CAPACITOR	CEAS4R7M50
	C163	CERAMIC CAPACITOR	CGCYX104K25
	C164	CERAMIC CAPACITOR	CGCYX103K25
	C167	CERAMIC CAPACITOR	CKCYF103Z50
	C168	CERAMIC CAPACITOR	CGCYX333K25
	C169	CERAMIC CAPACITOR	CGCYX103K25
	C170	CERAMIC CAPACITOR	CKCYB332K50
	C171,172	CERAMIC CAPACITOR	CKCYB472K50
	C205,210	CERAMIC CAPACITOR	CKCYF103Z50
	C215	CERAMIC CAPACITOR	CKCYF103Z50
	C218	CERAMIC CAPACITOR	CGCYX103K25
	C219	CERAMIC CAPACITOR	CKCYF103Z50
	C301	CERAMIC CAPACITOR	CGCYX104K25
	C302	ELECTR.CAPACITOR	CEAS471M6R3
	C306	CERAMIC CAPACITOR	CKCYB152K50
	C307	CERAMIC CAPACITOR	CGCYX473K25
	C308	CERAMIC CAPACITOR	CKCYF103Z50
	C309	ELECTR.CAPACITOR	CEASR47M50
	C319	CERAMIC CAPACITOR	CKCYF102Z50
	C351	ELECTR.CAPACITOR	CEAS101M10
	C353,361	CERAMIC CAPACITOR	CKCYF103Z50
	C366	CERAMIC CAPACITOR	CKCYF103Z50
	C393	CERAMIC CAPACITOR	CCCSL101J50
	C397	MYLAR FILM CAPACITOR	CQMA104K50
	C403	CERAMIC CAPACITOR	CCCCH150J50
	C404	CERAMIC CAPACITOR	CCCCH330J50
	C406	CERAMIC CAPACITOR	CKCYF103Z50
	C413-416	MYLAR FILM CAPACITOR	CQMA104K50
	C417	CERAMIC CAPACITOR	CCCSL101J50
	C421	MYLAR FILM CAPACITOR	CQMA103K50
	C427-430	CERAMIC CAPACITOR	CCCCH470J50
	C431,432	ELECTR.CAPACITOR	CEAS330M16
	C433,434	ELECTR.CAPACITOR	CEAS470M50
	C435-438	CERAMIC CAPACITOR	CCCCH270J50
	C441,442	PL.STYRENE CAPACITOR	CQSA102J50
	C461	CERAMIC CAPACITOR	CKCYF103Z50
RESISTORS			
	VR151	VR(22kΩ)	RCP1046
	VR152	VR(22kΩ)	RCP1046
		OTHER RESISTORS	RD1/6PM □□□J
OTHERS			
	CN351	CONNECTOR(40P)	HLEM40S-1
	JA391	JACK/12V	PKN1004
	JA392	JACK/12V	PKN1004
	JA393	JACK(MINI)	PKN1005
	JA401	JACK(2P)	PKB1009
	X401	XTAL RES (16.9344M)	PSS1006
⚠		TERMINAL	RKC-061
CONNECTION BOARD Ass'y			
OTHER			
⚠	CN131	CONNECTOR(12P)	12FM-1.0ST
FUNCTION BOARD Ass'y			
SEMICONDUCTORS			
	IC751	MICROCOMPUTER,IC	PD4408A
	Q751,753	TRANSISTOR	2SC1740S
	Q754-756	TRANSISTOR	2SC1740S
	D701-712	DIODE	1SS254
	D751	DIODE	1SS254

Mark	No.	Description	Part No.
SWITCHS			
	S703	SWITCH(A.D.L.C.)	PSG1006
	S705	SWITCH(PROGRAM)	PSG1006
	S706	SWITCH(DISC 6)	PSG1006
	S707	SWITCH(DISC 5)	PSG1006
	S708	SWITCH(DISC 4)	PSG1006
	S709	SWITCH(DELETE)	PSG1006
	S710	SWITCH(+10)	PSG1006
	S711	SWITCH(5)	PSG1006
	S712	SWITCH(4)	PSG1006
	S713	SWITCH(COMPU PGM)	PSG1006
	S714	SWITCH(≧20)	PSG1006
	S715	SWITCH(10)	PSG1006
	S716	SWITCH(9)	PSG1006
	S717	SWITCH(TIME FADE)	PSG1006
	S718	SWITCH(REPEAT)	PSG1006
	S719	SWITCH(▸▸|)	PSG1006
	S720	SWITCH(|◂◂)	PSG1006
	S721	SWITCH(TIME)	PSG1006
	S722	SWITCH(PLAY)	PSG1006
	S725	SWITCH(PAUSE)	PSG1006
	S726	SWITCH(STOP)	PSG1006
	S727	SWITCH(HI-LITE SCAN)	PSG1006
	S728	SWITCH(RANDOM PLAY)	PSG1006
	S729	SWITCH(▸▸)	PSG1006
	S730	SWITCH(◂◂)	PSG1006
	S731	SWITCH(FADER OUT)	PSG1006
	S732	SWITCH(FADER IN)	PSG1006
	S733	SWITCH(8)	PSG1006
	S734	SWITCH(7)	PSG1006
	S735	SWITCH(6)	PSG1006
	S736	SWITCH(M3)	PSG1006
	S737	SWITCH(3)	PSG1006
	S738	SWITCH(2)	PSG1006
	S739	SWITCH(1)	PSG1006
	S740	SWITCH(M2)	PSG1006
	S741	SWITCH(DISC 3)	PSG1006
	S742	SWITCH(DISC 2)	PSG1006
	S743	SWITCH(DISC 1)	PSG1006
	S744	SWITCH(M1)	PSG1006
CAPACITORS			
	C711,754	MYLAR FILM CAPACITOR	CQMA104K50
	C756	CERAMIC CAPACITOR	CKPUYF103Z25
RESISTOR			
		ALL RESISTORS	RD1/6PM □□□J
OTHERS			
	CN701	CONNECTOR(40P)	HLEM40R-1
	V701	FL INDICATOR TUBE	PEL1056
	X751	CERAMIC RESONATOR (4.19M)	VSS1014

Mark	No.	Description	Part No.
SUB FUNCTION BOARD Ass'y			
SWITCHS			
	S845	SWITCH(EJECT 1)	PSG1006
	S846	SWITCH(EJECT 2)	PSG1006
	S847	SWITCH(EJECT 3)	PSG1006
POWER SWITCH Ass'y			
SEMICONDUCTOR			
	D801	LED	SLH-56VC3H
SWITCHS			
	S801	SWITCH(STANDBY)	PSG1006
	S802	SLIDE SWITCH (TIMER START)	RSH1017
RESISTOR			
		ALL RESISTORS	RD1/6PM□□□J
OTHER			
		REMOTE SENSOR	HC-177
HEADPHONE BOARD Ass'y			
CAPACITORS			
	C501	CERAMIC CAPACITOR	CKCYF473Z50
	C502,503	CERAMIC CAPACITOR	CKCYF103Z50
COIL			
	L501,503	AXIAL INDUCTOR	LAU010K
RESISTOR			
	VR501	VR	PCS1003
OTHER			
	JA501	JACK(HEADPHONE)	RKN1002

Mark	No.	Description	Part No.
MECHANISM BOARD Ass'y			
SWITCHS			
	S951	PUSH SWITCH	DSG1016
	S952	PUSH SWITCH	DSG1016
	S953	PUSH SWITCH	DSG1015
	S954	LEVER SWITCH	RSK1003
	S955	LEVER SWITCH	RSK1003
	S956	PUSH SWITCH	DSG1015
	S957	LEVER SWITCH	RSK1003
	S958	PUSH SWITCH	DSG1015
SENSOR BOARD Ass'y			
SEMICONDUCTOR			
	Q901	PHOTO INTERRUPTER	GP1A52HR
SWITCH			
	S901	PUSH SWITCH	DSG1016
CAPACITOR			
	C901	ELECTR.CAPACITOR	CEJA100M16
RESISTOR			
		ALL RESISTORS	RD1/6PM□□□J
MECHANISM BOARD Ass'y			
SWITCH			
	S610	PUSH SWITCH	DSG1016

6. ADJUSTMENTS

6.1 HEIGHT ADJUSTMENT OF THE SENSOR PLATE

1. Adjust screw Ⓐ until the top of the sensor plate is 7mm above the main chassis. (Figure 6-1)
2. Activate TEST MODE. (See page 37.)
3. Insert the CD magazine into the Opening of MAGAZINE [3].
   (The tray for DISC 1 is automatically loaded.)
4. Press DISC 6 of the DISC NUMBER buttons twice in succession. (The tray for DISC 6 is loaded.)
5. Remove CN206 to fix the DISC SELECT motor.
   (For the location of CN206, see figure 1 on page 37.)
6. Press DISC 1 of the DISC NUMBER buttons twice in succession. (The turn drive lever stops at the loading start position.)
7. Check that the upper side of the turn drive lever is 0mm $^{+0mm}_{-0.2mm}$ above the top of the DISC 6 tray (tray 6).
   (Figure 6-1, MAGAZINE [3])
8. When the check is completed, connect CN206.
   (at least 15 seconds after step 6 is completed)
   - If the upper side position of the turn drive lever is slanted upward to the plus direction, turn screw Ⓐ clockwise to fine-adjust the sensor plate mounting position downward.
   - After readjusting screw Ⓐ , press the STOP(□) button and repeat steps 4 through 6.
   - If the upper side position of the turn drive lever is slanted downward to the minus direction, turn screw Ⓐ counterclockwise. Then press the STOP(□) button and repeat steps 4 through 6.
9. Eject the CD magazine by pressing the MAGAZINE [3] EJECT (⏏) button.
10. Insert the CD magazine into the Opening of MAGAZINE [1].
    (The tray for DISC 1 is automatically loaded.)
11. Press DISC 6 of the DISC NUMBER buttons twice in succession. (The tray for DISC 6 is loaded.)
12. Remove CN206 to lock the DISC SELECT motor.
    (For the location of CN206, see figure 1 on page 37.)
13. Press DISC 1 of the DISC NUMBER buttons twice in succession. (The turn drive lever stops at the loading start position.)
14. Check that the upper side of the turn drive lever is 0mm $^{+0.2mm}_{-0.6mm}$ above the top of the DISC 6 tray (tray 6).
    (Figure 6-1, MAGAZINE [1])
15. When the check is completed, connect CN206.
    (at least 15 seconds after step 13 is completed.)
16. Eject the CD magazine by pressing the MAGAZINE [1] EJECT (⏏) button.
    Insert the CD magazine in the opening of MAGAZINE [2] and perform the same check for MAGAZINE [2] as for MAGAZINE [1].

Note: In disc selection, the servo mechanism section moves vertically. This servo mechanism section is designed to reduce the elevation speed at the position of the tray preceding the specified tray of the disc. This permits the elevation movement to be stopped exactly at specified disc tray.

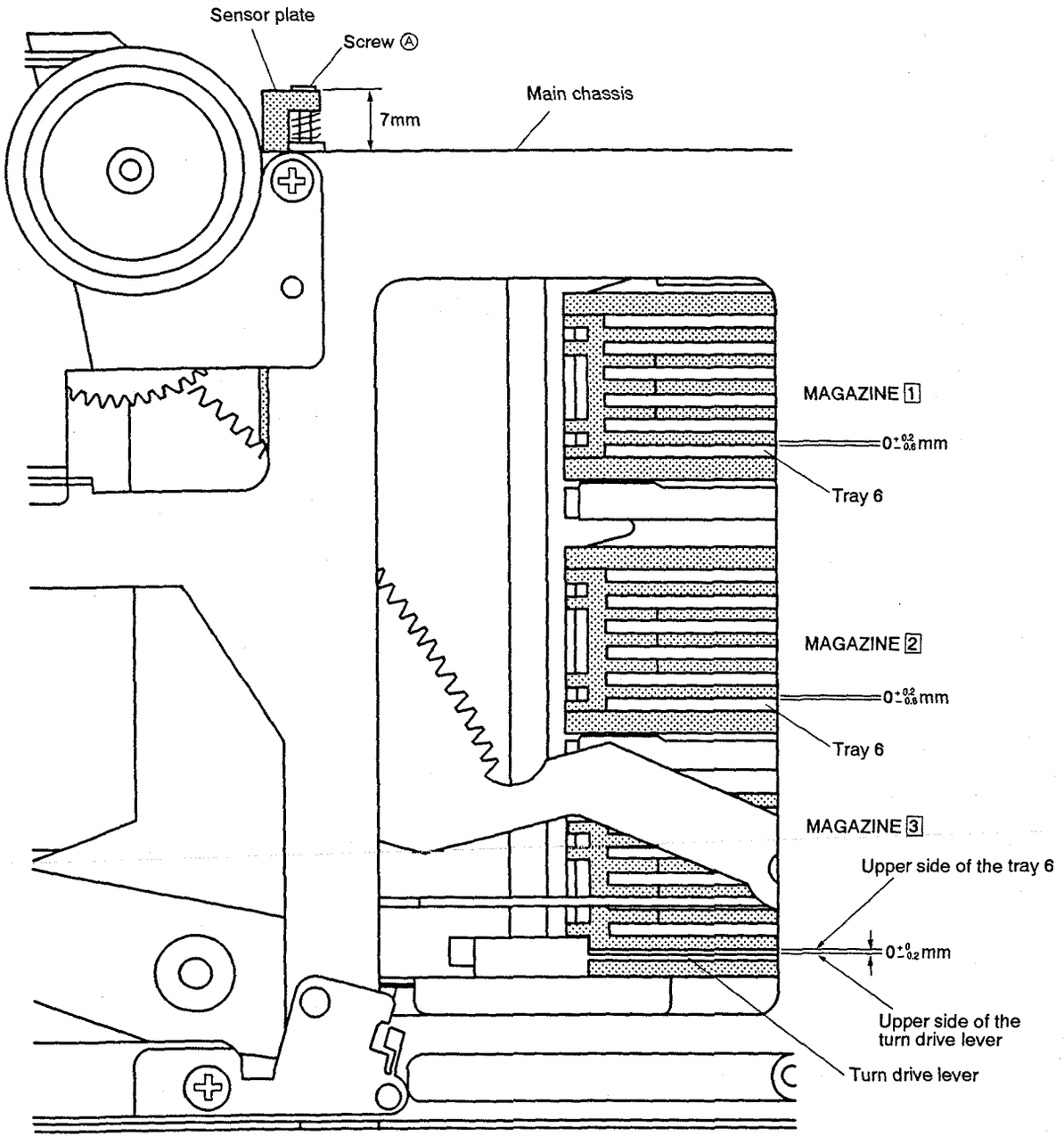

Sensor plate
Screw Ⓐ
7mm
Main chassis
MAGAZINE 1
0±0.2/0.6 mm
Tray 6
MAGAZINE 2
0±0.2/0.6 mm
Tray 6
MAGAZINE 3
Upper side of the tray 6
0±0/0.2 mm
Upper side of the turn drive lever
Turn drive lever

Figure. 6-1

6.2 CD PLAYER ADJUSTMENT

Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in steps 1 – 4, the pickup block may be defective.

Step	Item	Test Point	Adjustment Location
1	Focus offset verification	TP1, Pin 6 (FCS. ERR)	None
2	Tracking error balance verification	TP1, Pin 2 (TRK. ERR)	None
3	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
4	RF level verification	TP1, Pin 1 (RF)	None
5	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
6	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)

● **Abbreviation table**

FCS. ERR :Focus Error
TRK. ERR :Tracking Error
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring Instruments and Tools

1. Dual trace oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Resistor (100 kΩ)
5. Standard tools

● Test Point and Adjustment Variable Resistor Positions

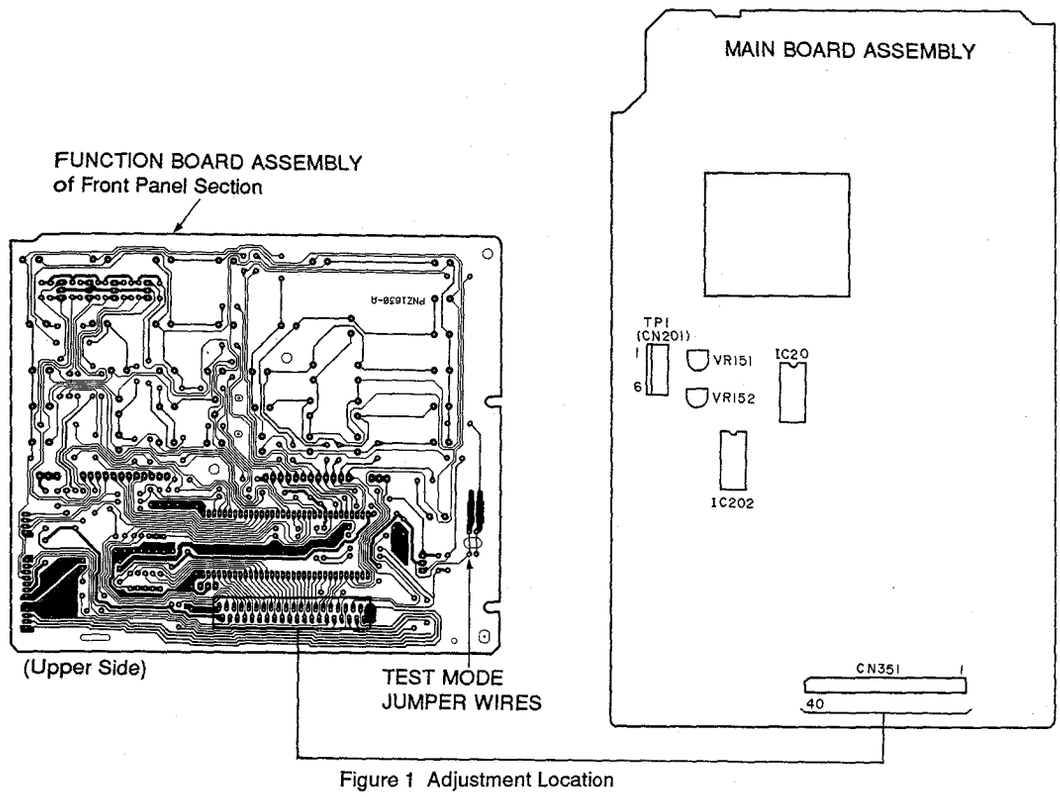


Figure 1 Adjustment Location

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Unplug the power cord from the AC socket.
2. Short the test mode jumper wires. (See Figure 1.)
3. Plug the power cord back into the AC socket.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Unplug the power cord from the AC socket.

[Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	PGM (PROGRAM)	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised three times and returned to its original position.
▷	PLAY	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
□□	PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly, it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function in Test Mode	Explanation
◁◁	MANUAL SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▷▷	MANUAL SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
⏏	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note:

- When inserting the CD magazine, disc 1 of the magazine is loaded automatically.
- DISC NUMBER buttons (DISC 1 - DISC 6) and MAGAZINE buttons (M1 - M3) function properly on test mode conditions.
  If it does not function, when you press the DISC NUMBER button once, press the same button twice more.
  When a CD magazine is inserted into MAGAZINE [1], pressing any of DISC NUMBER buttons (DISC 1 - DISC 6) selects the disc in MAGAZINE [1].

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

PGM(PROGRAM)	Lights up the laser diode and closes the focus servo.
⇩	
PLAY ▷	Starts the spindle motor and closes the spindle servo.
⇩	
PAUSE ▯▯	Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Verification

<table>
<tr><td>● Objective

● Symptom when out of adjustment</td><td colspan="3">Verify the DC offset for the focus error amp.

The model does not focus in and the RF signal is dirty.</td></tr>
<tr><td>● Measurement instrument connections</td><td>Connect the oscilloscope to TP1, Pin 6 (FCS. ERR)

[Settings] 5 mV/division
10 ms/division
DC mode</td><td>● Player state

● Adjustment location

● Disc</td><td>Test mode, stopped
(just the Power switch on)

None

None needed</td></tr>
<tr><td colspan="4">[Procedure]

Verify the DC voltage at TP1, Pin 6 (FCS. ERR) is 0 ± 50 mV.</td></tr>
</table>

Note : If the specified values cannot be obtained or no adjustment is possible by performing the verifications or adjustments described in adjustment items 1 - 4, the pickup block may be defective.

2. Tracking Error Balance Verification

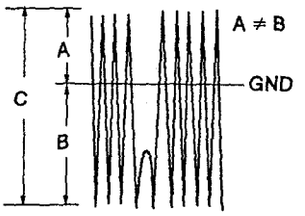
● Objective	To verify that there is no variation in the sensitivity of the tracking photo diode.		
● Symptom when out of adjustment	Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open None YEDS-7

[Procedure]

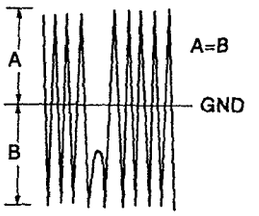
1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key.
2. Press the PGM (PROGRAM) key, then the PLAY ▷ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Supposing that the positive amplitude of the tracking error signal at TP1, pin 2 (TRK ERR) is (A) and the negative amplitude is (B), the following expression is satisfied.

$$A \geqq B : \frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$$

$$A < B : \frac{B-A}{C} \times \frac{1}{2} \leqq 0.1$$



When there is a DC component



When there is no DC component

3. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken;some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35mm). Press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 3).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.
5. When the adjustment is completed, lock the radial and tangential adjustment screw.

Note:Radial and tangential mean the directions relative to the disc shown in Figure 2.

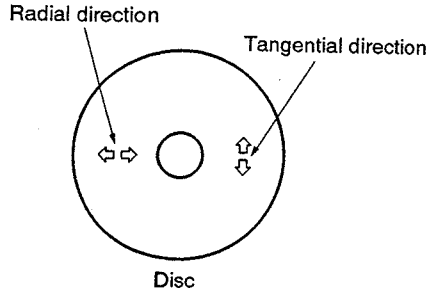
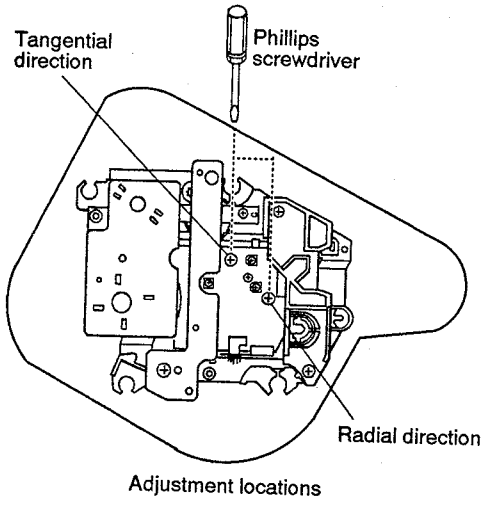


Figure 2



Adjustment locations

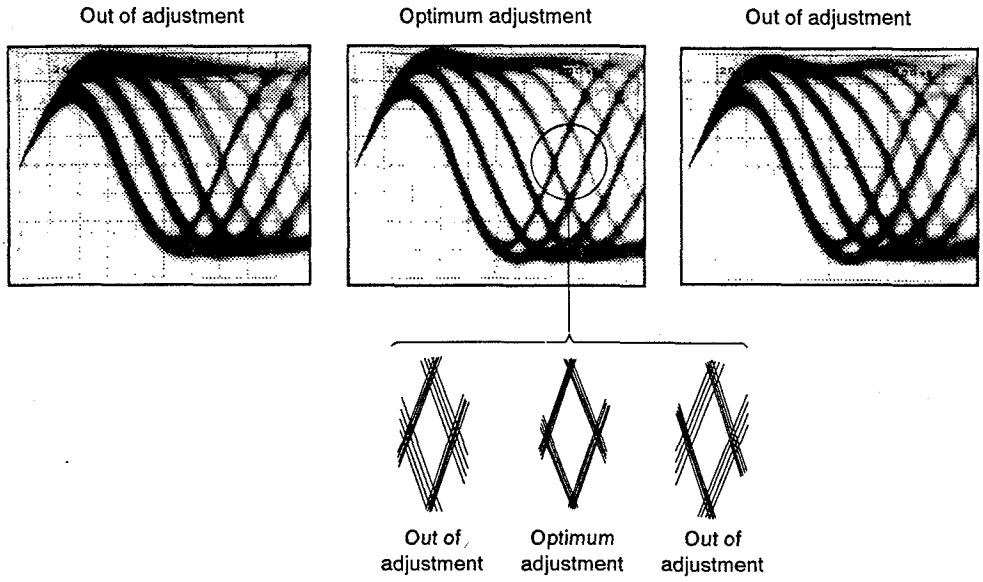


Figure 3 Eye pattern

4. RF Level Verification

● Objective	To verify the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play None YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key, then press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the respective servos and put the player into play mode.
2. Verify the RF signal amplitude is 1.2 Vp-p ± 0.2 V.

5. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 4. [Settings] CH1 CH2 20 mV/division 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR152 (FCS. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

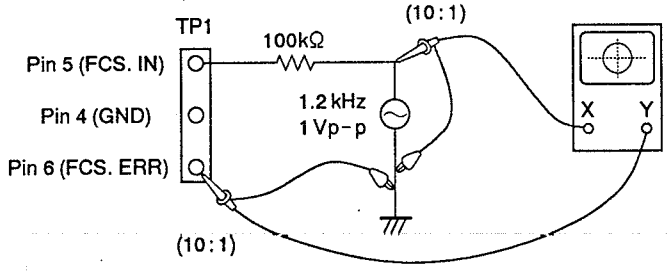
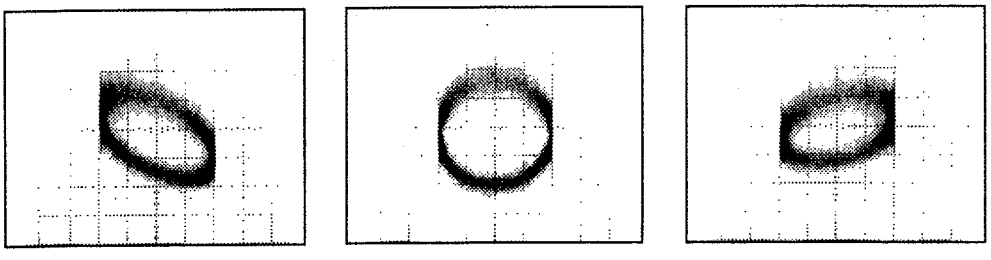


Figure 4

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

6. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 5. [Settings] CH1 CH2 50 mV/division 20 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the MANUAL SEARCH FWD ▷▷ or REV ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PGM (PROGRAM) key, the PLAY ▷ key, then the PAUSE ▯▯ key in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

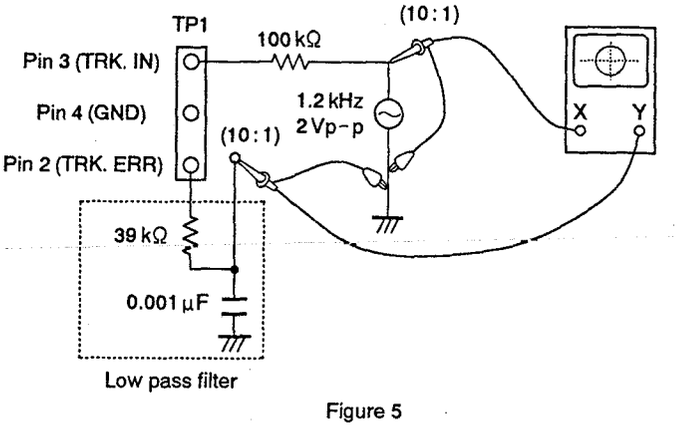
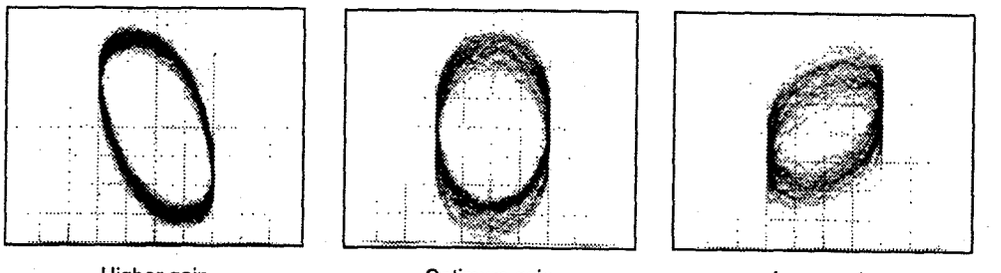


Figure 5

Tracking Gain Adjustment



Higher gain | Optimum gain | Lower gain

6. REGLAGES

6.1 REGLAGE DU HAUTEUR DU PLATEAU DE CAPTEUR

1. Régler la tournevis Ⓐ jusqu'à ce que la côté supérieure du plateau de capteur soit 7mm au-dessus du châssis principal. (Figure 6-1)
2. Actionner TEST MODE. (Voir page 51.)
3. Insérer le magasin CD á la fente du MAGAZINE 3.
   (Le plateau de DISC 1 est automatiquement chargé.)
4. Appuyer sur la touche DISC 6 des touches DISC NUMBER deux fois consécutivement.
   (Le plateau de DISC 6 est chargé.)
5. Enlever le CN206 et fixer le moteur DISC SELECT.
   (Pour l'emplacement du CN206, voir figure 1, page 51.)
6. Appuyer sur la touche DISC 1 des touches DISC NUMBER deux fois consécutivement. (Le levier d'entraînement de rotation s'arrête sur la position de démarrage de chargement.)
7. Vérifier que la côté supérieure du levier d'entraînement de rotation est 0mm $^{+0mm}_{-0.2mm}$ au-dessus de la côté supérieure du plateau DISC 6 (plateau 6).
   (Figure 6-1, MAGAZINE 3)
8. Quand la vérification est finil, rebrancher le CN206. (Au moins 15 secondes après que l'étape 6 est accomplie.)
   - Si la côté supérieure du levier d'entraînement de rotation est inclinée vers le haut (vers le plus), tourner la tournevis Ⓐ dans le sens des aiguilles d'une montre pour régler délicatement la position de montage du plateau de capteur vers le bas.
   - Aprés le re-réglage de la tournevis Ⓐ, appuyer sur la touche STOP (□), et répéter les étapes 4 à 6.
   - Si la côté supérieure du levier d'entraînement de rotation est inclinée vers le bas (vers le moins), tourner la tournevis Ⓐ en sens enverse des aiguilles d'une montre. Puis, appuyer sur la touche STOP (□), et répéter les étapes 4 à 6.
9. Ejecter le magasin CDen appuyant sur la touche MAGAZINE 3 EJECT (⏏).
10. Insérer le magasin CD á la fente de MAGAZINE 1.
    (Le plateau de DISC 1 est automatiquement chargé.)
11. Appuyer sur la touche DISC 6 des touches DISC NUMBER deux fois consécutivement. (Le plateau de DISC 6 est chargé.)
12. Enlever le CN206 pour verrouiller le moteur DISC SELECT. (Pour l'emplacement du CN206, voir Figure 1, page 51.)
13. Appuyer sur la touche DISC 1 des touches DISC NUMBER deux fois consécutivement. (Le levier d'entraînement de rotation s'arrête á la position de démarrage de chargement.)
14. Vérifier que la côté supérieure du levier d'entraînement de rotation est 0mm $^{+0.2mm}_{-0.6mm}$ au-dessus de la côté supérieure du plateau DISC 6 (plateau 6).
    (Figure 6-1, MAGAZINE 1)
15. Quand la vérification est finie, rebrancher le CN206.
    (Au moins 15 secondes aprés que l'étape 13 est accomplie.)
16. Ejecter le magasin CD en appuyant sur la touche MAGAZINE 1 EJECT (⏏).
    Insérer le magasin CD á la fente de MAGAZINE 2, et procéder á la même vérification pour le MAGAZINE 2 comme pour le MAGAZINE 1.

Remarque: En cas de sélection de disc, la section du mécanisme d'asservisement se déplace verticalement. Cette section est conçue pour que la vitesse d'élévation se ralentit sur la position du plateau précédent au plateau de disc spécifié. Ceci permet au mouvement d'élévation d'être arrêté exactement au plateau de disc spécifié.

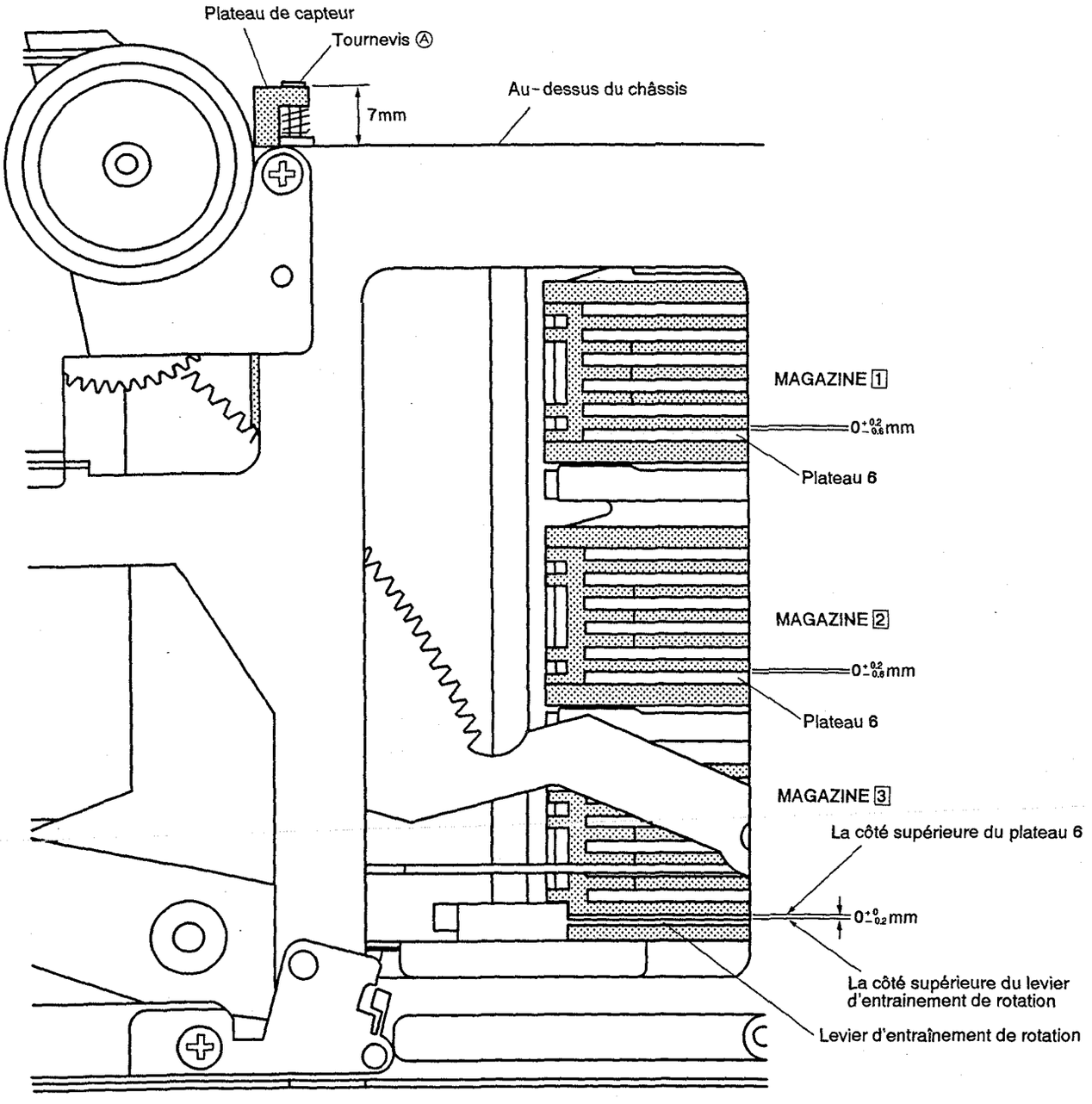

Plateau de capteur
Tournevis Ⓐ
7mm
Au-dessus du châssis
MAGAZINE 1
0 +0.2 -0.6 mm
Plateau 6
MAGAZINE 2
0 +0.2 -0.6 mm
Plateau 6
MAGAZINE 3
La côté supérieure du plateau 6
0 +0 -0.2 mm
La côté supérieure du levier d'entrainement de rotation
Levier d'entraînement de rotation

Figure. 6-1

6.2 REGLAGES DU LECTEUR CD

Méthodes de Réglage

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

● Points de Réglage/Point et Ordre de Vérification

Si les valeurs spécifiées sont impossibles à obtenir, ou si le réglage n'est pas possible d'après les instructions de vérification ou de réglage les étapes 1 à 4, le bloc optique est sans doute défectueux.

Etape	Point	Point d'Essai	Emplacement du Réglage
1	Vérification du décalage de la mise au point	TP1, Broche 6 (FCS. ERR)	Aucun
2	Vérification d'équilibrage d'erreur d'alignement	TP1, Broche 2 (TRK. ERR)	Aucun
3	Réglage d'inclinaison radiale/ tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, vis de réglage d'inclinaison tangentielle
4	Vérification du niveau RF	TP1, Broche 1 (RF)	Aucun
5	Réglage de gain de bouncle asservie de la mise au point	TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR)	VR152 (FCS. GAN)
6	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR)	VR151 (TRK. GAN)

● **Tableau des abbréviations**

FCS. ERR :Erreur de mise au point
TRK. ERR :Erreur d'alignement
FCS GAN :Gain de mise au point
TRK GAN :Gain d'alignement
FCS. IN :Mise au point correcte
TRK. IN :Alignement correct

● Instruments de Mesure et Outils

1. Oscilloscope cathodeique à deux faisceaux (sonde 10 : 1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS-7)
4. Résistance (100 kΩ)
5. Outils conventionnels

● Point d'Essai et Positions de Réglage de la Résistance Variable

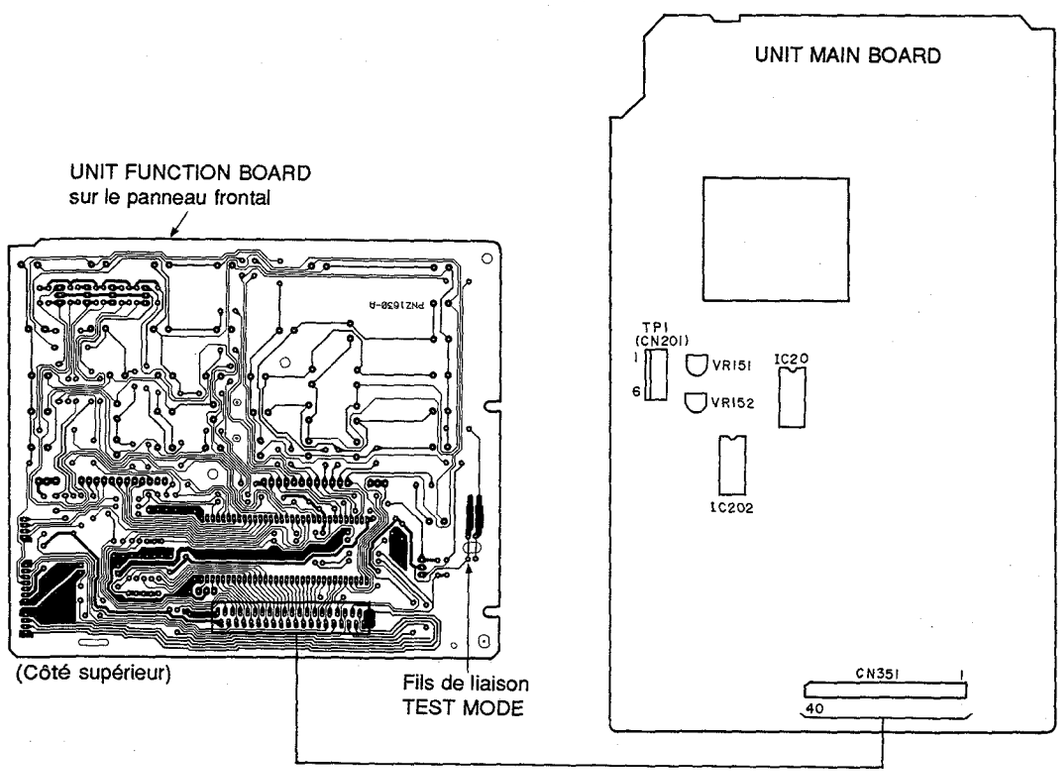


Figure 1 Emplacement des réglages

● Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

● Mode d'Essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en Mode d'Essai]

Voici la menière de mettre le modèle en mode d'essai.
1. Débrancher le cordon d'alimentation de la prise secteur.
2. Court-circuiter les fils de liaison du mode d'essai. (Voir Figure 1.)
3. Rebrancher le cordon d'alimentation dans la prise secteur.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise souns tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.
1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Débrancher le cordon d'alimentation de la prise secteur.

[Fonctionnement des touches en mode d'essai]

Code	Nom de la Touche	Fonction en Mode d'Essai	Explications
	PGM (PROGRAM)	Fermeture du circuit asservi de la mise au point	La diode laser s'allume et l'actuateur de la mise au point se relève, puis s'abaisse lentement et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque. Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible. Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point se soulève, puis s'abaisse et se soulève trois fois, et enfin revient à sa position de départ.
▷	PLAY	Asservissement de rotation en service	Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée. Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum. Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.
□□	PAUSE	Ouverture/Fermeture du circuit servo de l'alignement	Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en coures de lecture et la durée écoulée, puis sort le signal de lecture. Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit déréglé, ou qu'un autre problème se manifeste. Cette touche est de type à bascule, et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.

Code	Nom de la Touche	Founction en Mode d'Essai	Explications
◁◁	MANUAL SEARCH REV	Inversion du chariot (vers l'intérieur)	Déplace le capteur vers la périphérie interne du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
▷▷	MANUAL SEARCH FWD	Inversion du chariot (vers l'extérieur)	Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
□	STOP	Arrêt	Initialiser et la rotation du disque s'arrête. Le capteur et le disque ne bougnet pas lorsque cette touche est enclenchée.
⏏	EJECT	Ejection du magasin à disques	Range le disque n°1 dans le magasin à disques, puis éjecte celui-ci. Cependant, bien que le magasin soit éjecté, le capteur ne revient pas sur sa position de départ. Même si le magasin à disques est réinstallé, la position du capteur reste inchangée.

Remarque :
- Lors de l'insertion du CD magasin, le disque 1 est chargé automatiquement.
- Les touches DISC NUMBER(DISC 1 á DISC 6) et les touches MAGAZINE(M1 á M3) fonctionnent correctement en mode essai.
  Si un appui sur la touche DISC NUMBER ne marche pas, appuyer sur la méme touche deux fois plus.
  Quand le magasin CD est inséré sur le MAGAZINE [1], le disc dans le MAGAZINE [1] peut être sélectionné en appuyant sur la touch correspondante des touches DISC NUMBER(DISC 1 á DISC 6).

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.
Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.

PGM (PROGRAM)	Allume la diode laser ferme le circuit servo de la mise au point.
⇩	
PLAY ▷	Démarre le moteur de rotation et ferme le circuit servo de la rotation.
⇩	
PAUSE ▯▯	Ferme le circuit servo de l'alignement.

Attendre 2 à 3 secondes entre chaque opération.

1. Vérification du Décalage de la Mise au Point

<table>
<tr><td>● Objectif

● Symptôme quand déréglé</td><td colspan="3">Vérifier le décalage CC de l'amplificateur d'erreur de mise au point.

Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.</td></tr>
<tr><td>● Raccordement des instruments de mesure</td><td>Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR).

[Réglages] 5 mV/division
10 ms/division
mode CC</td><td>● Etat du lecteur

● Emplacement du réglage

● Disque</td><td>Mode d'essai, arrêté
(juste l'interrupteur d'alimentation commuté sur marche)

Aucun

Aucun requis</td></tr>
<tr><td colspan="4">[Marche à suivre]
Vérifier que la tension à TP1 broche 6 (FCS. ERR) soit 0 ± 50 mV.</td></tr>
</table>

Remarque : Si les valeurs spécifiées sont impossibles à obtenir, ou si le réglage n'est pas possible d'après les instructions de vérification ou de réglage les réglage de l'item 1 à 4, le bloc optique est sans doute défectueux.

2. Vérification d'Équilibrage d'Erreur d'Alignement

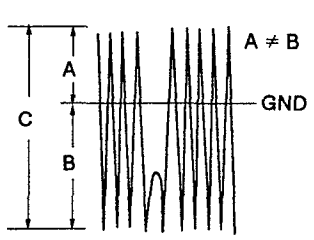
• Objectif • Symptôme quand déréglé	Pour vérifier qu'il n'y a pas de variation de sensibilité dans la photodiode d'alignement. La lecture ne commence pas, la recherche de piste est impossible.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas. [Réglages] 50 mV/division 5 ms/division mode CC	• Etat du lecteur • Emplacement du réglage • Disque	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert. Aucun YEDS-7

[Marche à suivre]

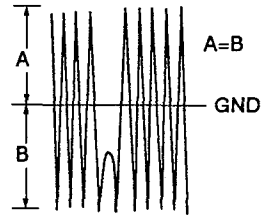
1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
2. Appuyer sur la touche PGM (PROGRAM), puis sur la touche PLAY ▷, dans cet ordre, pour fermeer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. En supposant que l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK ERR) est (A) et que l'amplitude négative est (B), l'expression ci-dessous est satisfaite.

$$A \geqq B : \frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$$

$$A < B : \frac{B-A}{C} \times \frac{1}{2} \leqq 0.1$$



S'il y a un composant CC



S'il n'y a pas de composant CC

3. Réglage d'Inclinaison Radiale/Tangentielle du Capteur

● Objectif	Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent vericalement le disque et permettre ainsi la lecture optimum des signaux RF.		
● Symptôme quand déréglé	Son interrompu ; certains disques peuvent être lus et pas d'autres.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 20 mV/division 200 ns/division mode CA	● Etat du lecteur	Mode d'essai, lecture
		● Emplacement du réglage	Vis de réglage d'inclinaison radiale. Vis de réglage d'inclinaison tangentielle.
		● Disque	YEDS-7

[Marche à suivre]

1. Dans le cas d'un lecteur multidisque, utiliser la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ pour déplacer le capteur à mi-chemin sur le disque (R=35 mm).
   Appuyer sur la touche PGM (PROGRAM), PLAY ▷ et PAUSE ▯▯ dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecture.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 3).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.
5. Lorsque le réglage est terminé, bloquer les vis de réglage radiale et tangentielle.

Remarque: "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 2.

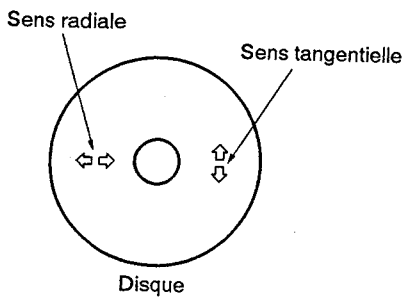
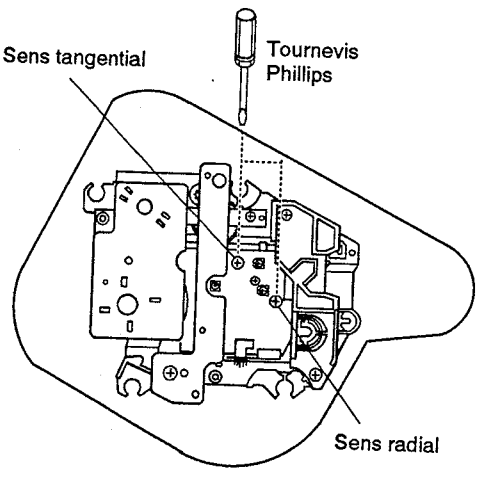


Figure 2



Emplacements des réglages

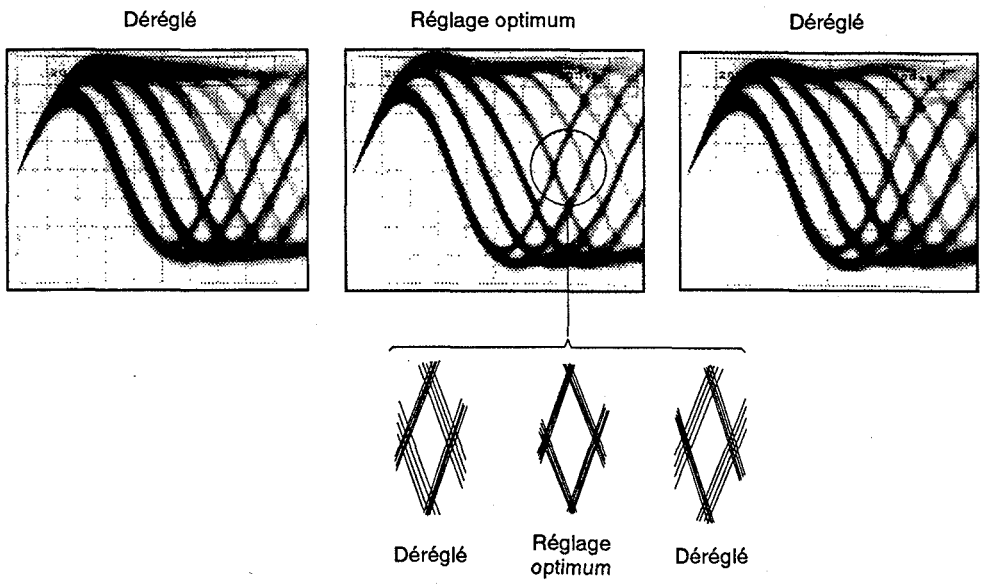


Figure 3 Motif en oeil

4. Vérification du Niveau RF (Niveau RF)

<table>
<tr><td>● Objectif

● Symptôme quand déréglé</td><td colspan="3">Vérifier de optimaliser l'amplitude du signal RF de lecture.

Pas de lecture ni de recherche.</td></tr>
<tr><td>● Raccordement des instruments de mesure</td><td>Raccorder l'oscilloscope à TP1, broche 1 (RF).

[Réglages] 50 mV/division
10 ms/division
mode CA</td><td>● Etat du lecteur

● Emplacement du réglage

● Disque</td><td>Mode d'essai, lecture

Aucun

YEDS-7</td></tr>
<tr><td colspan="4">[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque (R=35 mm) à l'aide de la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁.
Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▷ , puis sur la touche PAUSE ▯▯ , dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Vérifier de façon que l'amplitude du signal RF atteigne 1,2 Vc-c ± 0,2 V.</td></tr>
</table>

5. Réglage de Gain de Boucle Asservie de la Mise au Point

● Objectif ● Symptôme quand déréglé	Pour optimaliser le gain de la boucle d'asservissement de la mise au point. La lecture ne commence pas ou l'actuateur de la mise au point est parasité.		
● Raccordement des instruments de mesure	Voir Figure 4. [Réglages] GAN. 1 GAN. 2 20 mV/division 5mV/division mode X-Y	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture VR152 (FCS. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▷ , puis sur la touche PAUSE ▯▯ , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FCS. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

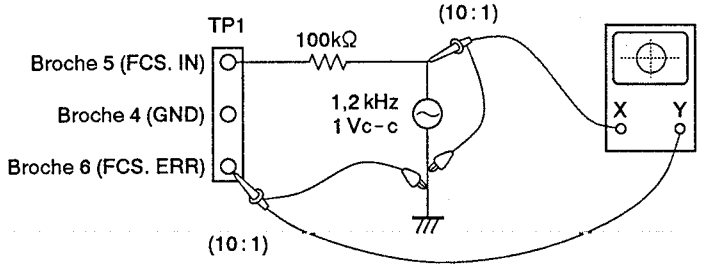
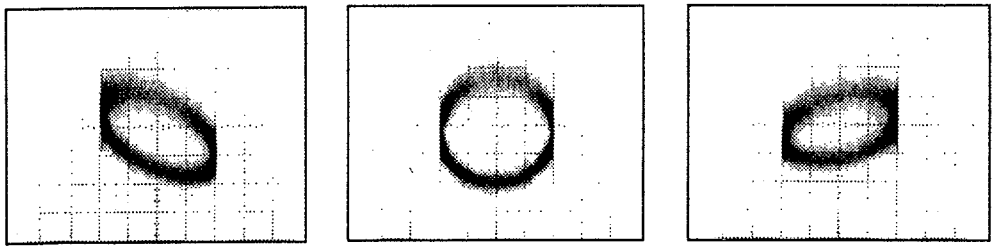


Figure 4

Réglage de gain de mise au point



Gain supérieur | Gain optimum | Gain inférieur

6. Réglage de Gain de Boucle Asservie de l'Alignement

● Objectif ● Symptôme quand déréglé	Pour optimaliser le gain de la boucle d'asservissement de l'alignement. La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.		
● Raccordement des instruments de mesure	Voir Figure 5. [Réglages] GAN. 1 GAN. 2 50 mV/division 20 mV/division mode X-Y	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture VR151 (TRK. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 2 Vc-c.
2. Appuyer sur la touche MANUAL SEARCH FWD ▷▷ ou la touche REV ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PGM (PROGRAM), la touche PLAY ▷ , puis sur la touche PAUSE ▯▯ , dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

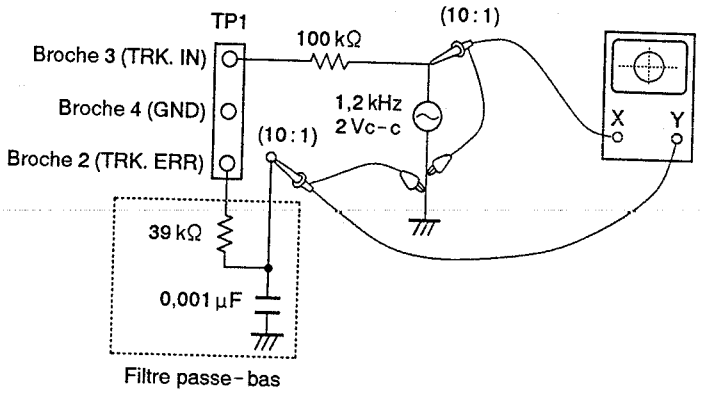
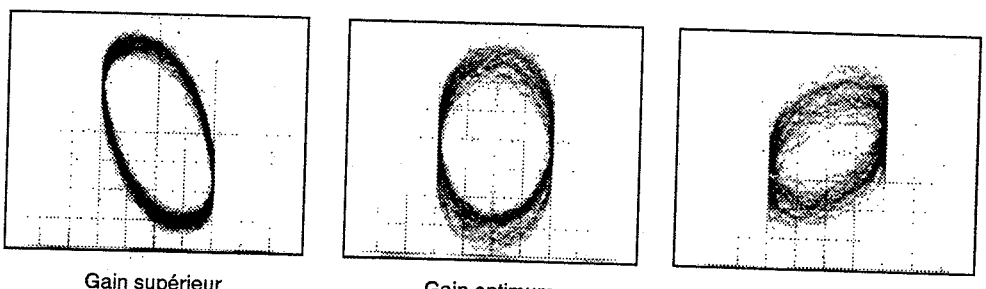


Figure 5

Réglage de gain d'alignement



Gain supérieur | Gain optimum | Gain inférieur

6. AJUSTES

6.1 AJUSTE DE LA ALTURA DEL PLATO DE SENSOR

1. Ajuste el tornillo Ⓐ hasta que el lado superior del plato de sensor sea 7mm sobre el chasis principal (Figura 6-1).
2. Accione TEST MODE. (Vea la página 65.)
3. Inserte el almacén de CD en la abertura de MAGAZINE [3]. (El plato de DISC 1 se carga automáticamente.)
4. Presione la tecla DISC 6 de las teclas DISC NUMBER dos veces sucesivamente. (El plato de DISC 6 se carga.)
5. Remueva el CN206 para fijar el motor DISC SELECT. (Para colocar el CN206, vea la figura 1 en la página 65.)
6. Presione la tecla DISC 1 de las teclas DISC NUMBER dos veces sucesivamente. (La palanca de conducción de giro se para en la posición principia de la carga.)
7. Asegúrese de que el lado superior de la palanca de conducción de giro está 0mm $^{+0mm}_{-0.2mm}$ sobre el lado superior del plato de DISC 6 (plato 6). (Figura 6-1, MAGAZINE [3])
8. Cuando termina la inspección, conecte el CN206. (A lo menos 15 segundos después de completar la etapa 6)
   - Si la posición del lado superior de la palanca de conducción de giro se inclina hacia arriba (hacia la dirección más), giro el tornillo Ⓐ en el sentido de las agujas del reloj para ajustar minuciosamente la posición de montaje del plato de sensor hacia abajo.
   - Después de ajustar el tornillo Ⓐ otra vez, presione la tecla STOP (□) y repita las etapas 4 a 6.
   - Si la posición del lado superior de la palanca de conducción de giro se inclina hacia abajo (hacia la dirección menos), gire el tornillo Ⓐ en el sentido contrario a las agujas del reloj.
     Después, presione la tecla STOP (□) y repita las etapas 4 a 6.
9. Saque el almacén de CD presionando la tecla MAGAZINE [3] EJECT (≙).
10. Inserte el almacén de CD en la abertura de MAGAZINE [1].
    (El plato de DISC 6 se carga automáticamente.)
11. Presione la tecla DISC 6 de las teclas DISC NUMBER dos veces sucesivamente.
    (El plato de DISC 6 se carga.)
12. Remueva el CN206 para fijar el motor DISC SELECT. (Para colocar el CN206, vea la figura 1 en la página 65.)
13. Presione la tecla DISC 1 de las teclas DISC NUMBER dos veces sucesivamente.
    (La palanca de conducción de giro se para en la posición principia de la carga.)
14. Asegúrese de que el lado superior de la palanca de conducción de giro está 0mm $^{+0.2mm}_{-0.6mm}$ sobre el lado superioir del plato de DISC 6 (plato 6).
    (Figura 6-1, MAGAZINE [1])
15. Cuando termina la inspección, conecte el CN206. (A lo menos 15 segundos después de completar la etapa 13)
16. Saque el almacén de CD presionando la tecla MAGAZINE [1] EJECT (≙).
    Inserte el almacén de CD en la abertura de MAGAZINE [2] y haga la misma inspección para MAGAZINE [2] como para MAGAZINE [1].

Nota: En la selección del disco, la sección de mecanismo de servo se mueve verticalmente. Esta sección de mecanismo de servo está diseñada para reducir la velocidad de elevación en la posición del plato anterior del plato designado. Esto permite el movimiento de elevación pararse exactamente en el plato de disco designado.

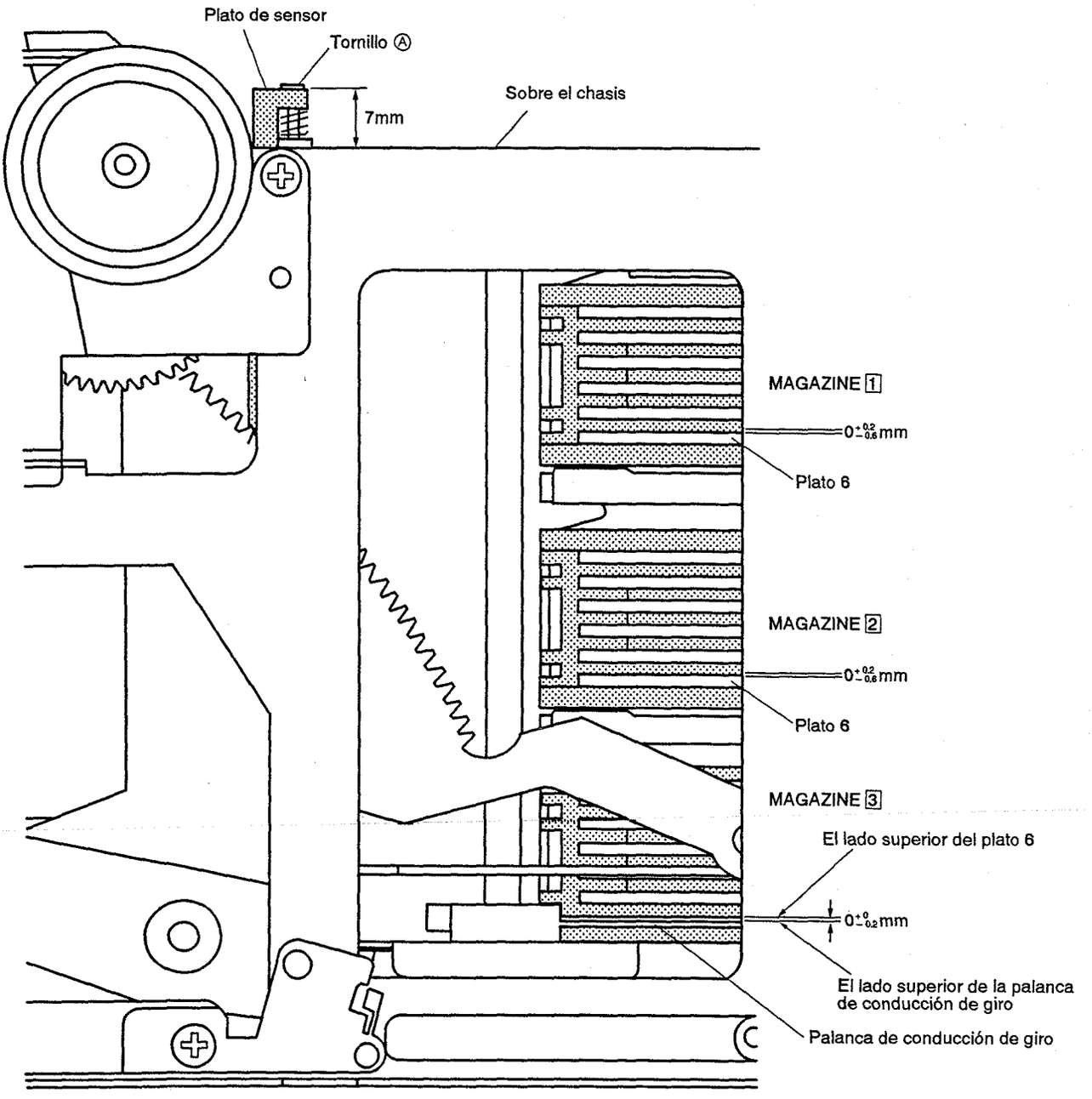

Plato de sensor
Tornillo Ⓐ
7mm
Sobre el chasis
MAGAZINE 1
0 +0.2 -0.6 mm
Plato 6
MAGAZINE 2
0 +0.2 -0.6 mm
Plato 6
MAGAZINE 3
El lado superior del plato 6
0 +0 -0.2 mm
El lado superior de la palanca de conducción de giro
Palanca de conducción de giro

Figura. 6-1

6.2 AJUSTE DEL REPRODUCTOR DE DISCOS COMPACTOS

Métodos de Ajuste

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

● Ítemes de Ajuste/Verificación y Orden

Si no se puede obtener los valores especificados o no puede realizar el ajuste haciendo los procedimientos escritos los pasos 1 a 4, el bloque del captor será defectuoso.

Paso	Ítem	Punto de Prueba	Lugar de Ajuste
1	Verificación del descentramiento de enfoque	TP1, Patilla 6 (FCS. ERR)	Ninguno
2	Verificación del equilibrio de ajuste de seguimiento	TP1, Patilla 2 (TRK. ERR)	Ninguno
3	Ajuste de la inclinación en sentido radial / tangencial del captor	TP1, Patilla 1 (RF)	Tornillo de ajuste de la inclinación radial. Tornillo de ajuste de la inclinación tangencial
4	Verificación del nivel de RF	TP1, Patilla 1 (RF)	Ninguno
5	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5 (FCS. IN) TP1, Patilla 6 (FCS. ERR)	VR152 (FCS. GAN)
6	Ajuste de la ganancia del bucle del servo de seguimiento	TP1, Patilla 3 (TRK. IN) TP1, Patilla 2 (TRK. ERR)	VR151 (TRK. GAN)

● **Tabla de abreviaturas**

FCS. ERR :Error de enfoque
TRK. ERR :Error de seguimiento
FCS GAN :Ganacia de enfoque
TRK GAN :Ganacia de seguimiento
FCS. IN :Entrada de enfoque
TRK. IN :Entrada de seguimiento

● Instrumentos y Herramientas de Medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS-7)
4. Resistor (100 kΩ)
5. Herramientas estándar

● Ubicación de Los Puntos de Prueba y Los Resistores Variables de Ajuste

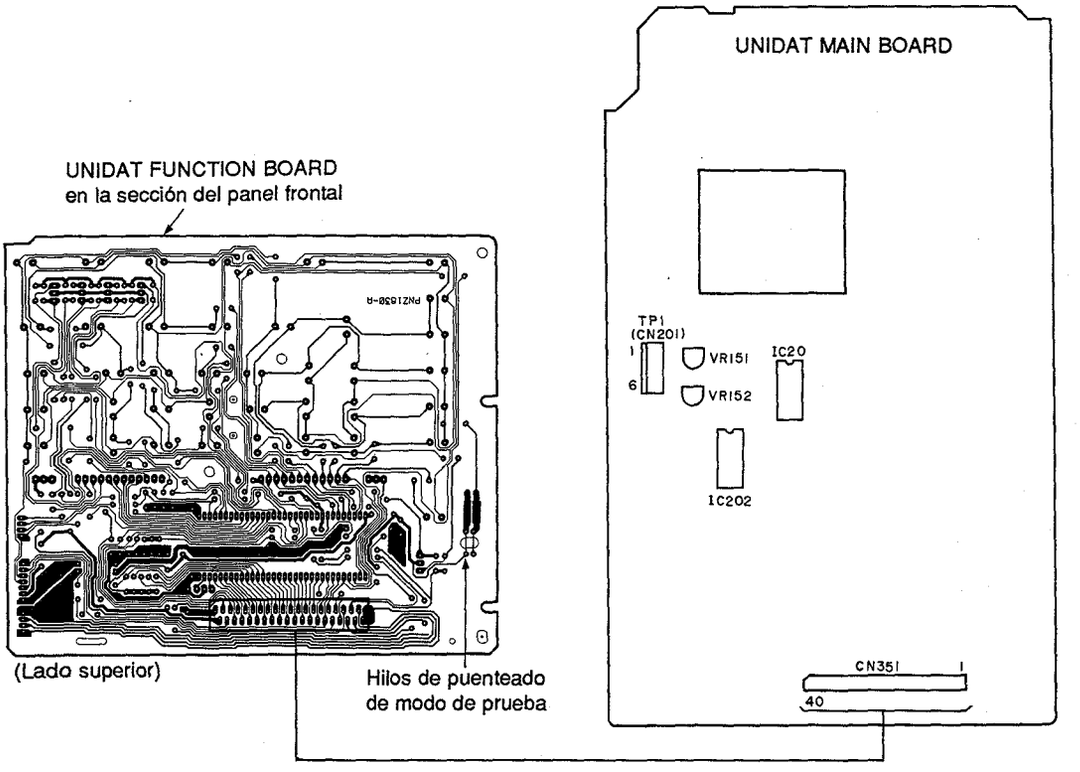


Figura 1 Lugares de ajuste

● Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

● Modo de Prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.
1. Desenchufe el cable de alimentación de la toma de CA.
2. Controcircuite los hilos de puenteado de mode de prueba. (Consulte la figura 1.)
3. Enchufe el cable de alimentación de la toma de CA.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siento la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.
1. Presione la tecla STOP y cese todas las operaciones.
2. Desenchufe el cable de alimentación de la toma de CA.

[Operaciones de teclas en el modo de prueba]

Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
	PGM (PROGRAM)	Cierre del servo de enfoque	El diodo láser se encenderá y el actuador de enfoque se eleva, después se desciende lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoque sobre el disco. Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque. Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se vera empujado hacia arriba, y después se levantará y descenderá tres veces, y volverá a su posición original.
▷	PLAY	Activación del servo del eje	Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado. Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima. Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz lasérico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.
□□	PAUSE	Apertura/cierre del servo de seguimiento	Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción. Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo lasérico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema. Esta tecla es basculante de acción alternativa, y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.

Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
◁◁	MANUAL SEARCH REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
▷▷	MANUAL SEARCH FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
□	STOP	Parada	Inicializa y se para la rotacion del desco. El captor y el disco permanecen donde están cuando se presiona esta tecla.
⏏	EJECT	Expulsión del cargador de discos compactos	Almacenará el disco 1 en el cargador de discos compactos, y después expulsará dicho cargador. Sin embargo, aunque el cargador de discos compactos sea expulsado, el captor no volverá a su posición de reposo. Aunque vuelva a montar el cargador de discos compactos, el captor permanecerá donde estaba.

Nota : • Cuando inserte el CD cargador, el disco 1 del mismo se cargará automáticamente.
• Las teclas DISC NUMBER(DISC 1-DISC 6) y las teclas MAGAZINE(M1-M3) se funcionan correctamente en los modos de prueba.
Si no se funciona cuando presiona la tecla DISC NUMBER una vez, presione la misma tecla dos veces más.
Cuando el almacén de CD se inserta en MAGAZINE [1], el disco en MAGAZINE [1] se selecciona por presionando la tecla DISC NUMBER(DISC 1-DISC 6).

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.
A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.

PGM (PROGRAM)	Hará que se encienda el diodo láser y cerrará el servo de enfoque.
⇩	
PLAY ▷	Pondrá en marcha el motor del eje y hará que se cierre el servo del eje.
⇩	
PAUSE ▯▯	Cerrará el servo de seguimiento.

Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Verificación del Descentramiento del Enfoque

<table>
<tr><td>● Objetivo

● Síntomas en caso de desajuste</td><td colspan="3">Verificación de la tensión de CC para el amplificador de error de enfoque.

El reproductor no enfoca y la señal de RF contiene perturbaciones.</td></tr>
<tr><td>● Conexión de los instrumentos de medición</td><td>Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR)

[Ajustes] 5 mV/división
10 ms/división
modo de CC</td><td>● Estado del reproductor

● Lugar de ajuste

● Disco</td><td>Mode de prueba, parado
(con el interruptor de alimentación en ON)

Ninguno

No es necesario</td></tr>
<tr><td colspan="4">[Procedimiento]
Verificación de la tensión de CC de TP1, patilla 6 (FCS. ERR) sea de 0 ± 50 mV.</td></tr>
</table>

Nota : Si no se puede obtener los valores especificados o no puede realizar el ajuste haciendo los procedimientos escritos los ajuste del ítem 1 a 4, el bloque del captor será defectuoso.

2. Verificación del Equilibrio de Error de Seguimiento

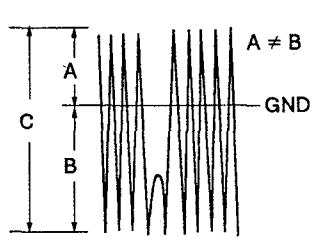
• Objetivo • Síntomas en caso de desajuste	Para comprobar que no hay variación en la sensitividad del diodo de la foto de seguimiento. La reproducción no se inicia o la búsqueda de canciones es imposible.		
• Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2 (TRK. ERR). Esta conexión puede realizarse a través de un filtro de paso bajo [Ajustes] 50 mV/división 5 ms/división modo de CC	• Estado del reproductor • Lugar de ajuste • Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto Ninguno YEDS-7

[Procedimiento]

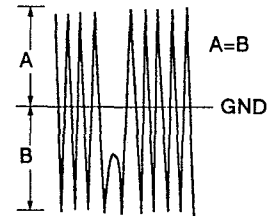
1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ .
2. Presione la tecla PGM (PROGRAM), y después la tecla PLAY ▷ , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Compruebe que la expresión siguiente se satisface, suponiendo que la amplitud positiva de la señal de error de seguimiento en TP1, alfiler 2 (TRK ERR) es (A), y la amplitud negativa es (B).

$$A \geqq B : \frac{A-B}{C} \times \frac{1}{2} \leqq 0.1$$

$$A < B : \frac{B-A}{C} \times \frac{1}{2} \leqq 0.1$$



Cuando hay componente de CC



Cuando no hay componente de CC

3. Ajuste de la Inclinación en Sentido Radial / Tangencial del Captor

● Objetivo	Ajustar el ángulo del captor en relación con el disco de forma que los haces lasércicos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF.		
● Síntomas en caso de desajuste	Sonido quebrado, algunos discos pueden reproducirse pero otros no.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF). [Ajustes] 20 mV/división 200 ns/división modo de CA	● Estado del reproductor	Modo de prueba, reproducción
		● Lugar de ajuste	Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial
		● Disco	YEDS-7

[Procedimiento]

1. Para un tipo de reproducción múltiple de disco compacto, emplee la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ a fin de mover el captor hasta la mitad del disco (R=35 mm)
   Presione la tecla PGM (PROGRAM), la tecla PLAY ▷ , y después la tecla PAUSE ▯▯ , por este orden, a fin de cerrar los servos rispectivos, y ponga el reproductor en el modo de reproducción.
2. En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
3. A continuación, ajuste el tornillo de ajuste de inclinación tangencial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 3).
4. Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.
5. Cuando se completa el ajuste, fije los tornillos para el ajuste radial y tangencial.

Nota:Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 2.

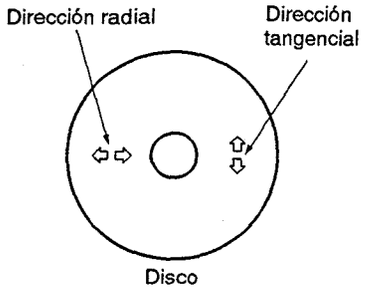
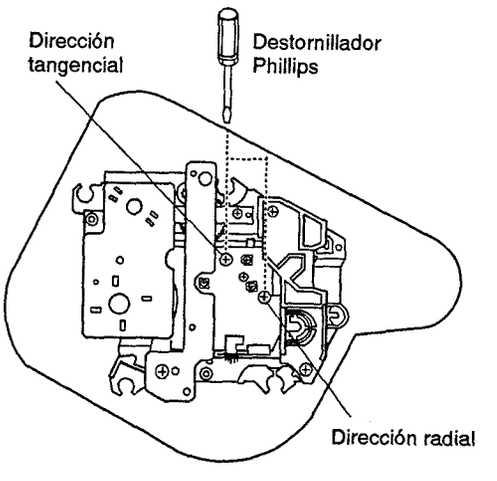


Figura 2



Lugares de ajuste

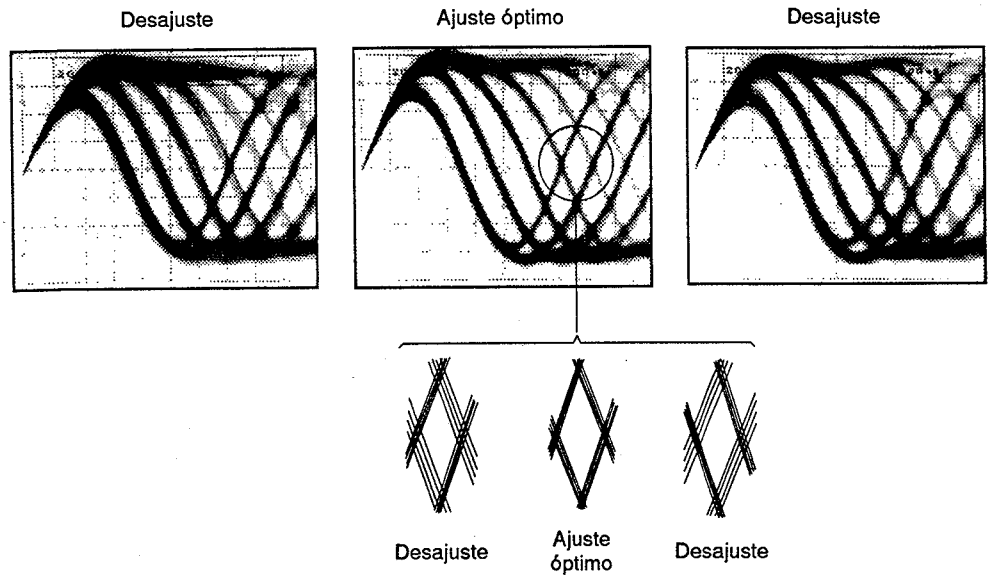


Figura 3 Patron optico

4. Verificación del Nivel de RF

<table>
<tr><td>● Objetivo

● Síntomas en caso de desajuste</td><td colspan="3">Verificación de la amplitud de la señal de RF de reproducción.

La reproducción no se inicia o la búsqueda de canciones es imposible.</td></tr>
<tr><td>● Conexión de los instrumentos de medición</td><td>Conecte el osciloscopio a TP1, patilla 1 (RF).

[Ajustes] 50 mV/división
10 ms/división
modo de CA</td><td>● Estado del reproductor

● Lugar de ajuste

● Disco</td><td>Modo de prueba, reproducción

Ninguno

YEDS-7</td></tr>
<tr><td colspan="4">[Procedimiento]
1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁, presione la tecla PGM (PROGRAM), la tecla PLAY ▷, y después la tecla PAUSE ▯▯, por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.
2. Verificación de la amplitud de la señal de RF sea de 1,2 Vp-p ± 0,2 V.</td></tr>
</table>

5. Ajuste de la Ganancia del Bucle del Servo de Enfoque

● Objetivo ● Síntomas en caso de desajuste	Optimización de la ganancia del bucle del servo de enfoque. La reproducción no se inicia o el actuador de enfoque produce ruido.		
● Conexión de los instrumentos de medición	Consulte la fugura 4. [Ajustes] CH1 CH2 20 mV/división 5mV/división modo X-Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR152 (FCS. GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PGM(PROGRAM), la tecla PLAY ▷ , y después la tecla PAUSE ▯▯ , por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

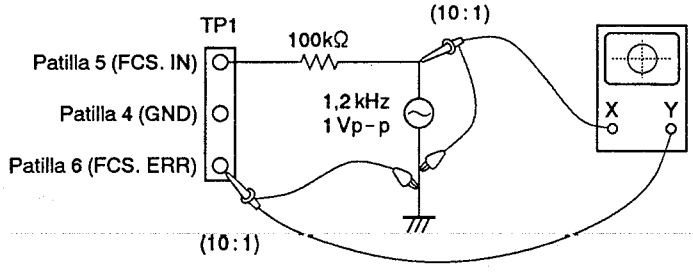
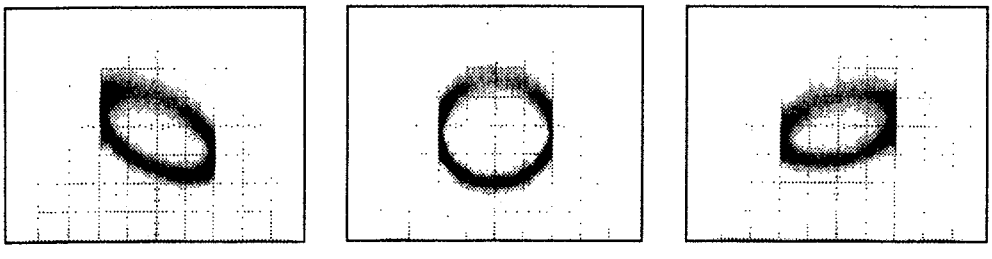


Figura 4

Ajuste de la ganancia de enfoque



Ganancia superio | Ganancia óptima | Ganancia inferior

6. Ajuste de la Ganancia del Bucle del Servo de Seguimiento

● Objetivo ● Síntomas en caso de desajuste	Optimización de la ganancia del bucle del servo de seguimiento. La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.		
● Conexión de los instrumentos de medición	Consulte la figura 5. [Ajustes] CH1 CH2 50 mV/división 20 mV/división modo X-Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR151(TRK. GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 2 Vp-p.
2. Presione la tecla MANUAL SEARCH FWD ▷▷ o la tecla REV ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PGM (PROGRAM), la tecla PLAY ▷, y la tecla PAUSE ▯▯, por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

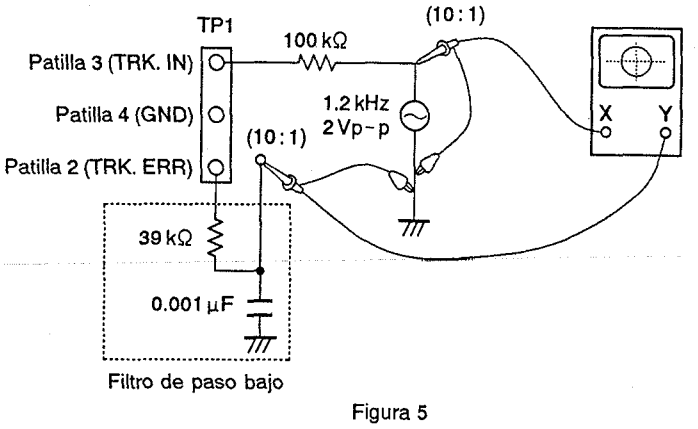
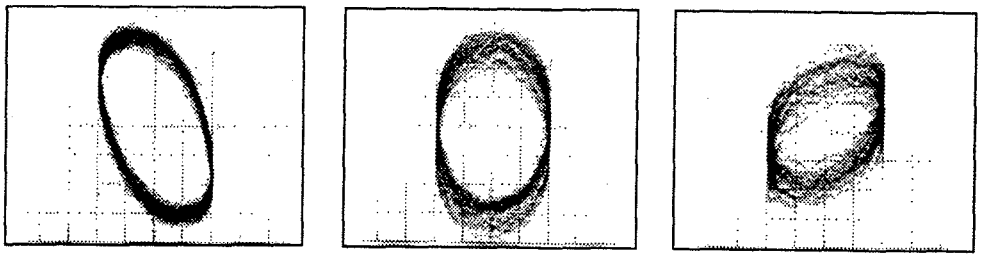


Figura 5

Ajuste de la ganancia de seguimiento



Ganancia superior | Ganancia óptima | Ganancia inferior

7. FOR KC, HEM AND SD TYPES

NOTES:

- *Part without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

7.1 CONTRAST OF MISCELLANEOUS PARTS

PD-TM2/KC, HEM, SD and PD-TM2/KU have the same construction except for the following:

Mark	Symbol & Description	Part No.				Remarks
		KU type	KC type	HEM type	SD type	
◉	Mother board Ass'y	PWM1615	PWM1615	PWM1616	PWM1618	
	Main board Ass'y	Non supply	Non supply	Non supply	Non supply	
◉	Sub board Ass'y	PWM1620	PWM1620	PWM1621	PWM1620	
	Headphone board Ass'y	Non supply	Non supply	Non supply	Non supply	
⚠	Strain relief	CM-22C	CM-22C	CM-22B	CM-22B	
⚠	AC power cord	PDG1015	PDG1015	PDG1003	PDG1013	
⚠	Power transformer (AC120V)	PTT1241	PTT1269	•••••	•••••	
⚠	Power transformer (AC220-230V, 230-240V)	•••••	•••••	PTT1242	•••••	
⚠	Power transformer (AC110V, 120-127V, 220V, 240V)	•••••	•••••	•••••	PTT1243	
⚠	Line voltage selector (AC110V, 120-127V, 220V, 240V)	•••••	•••••	•••••	PSB1002	
	Cord with mini plug	PDE-319	PDE-319	•••••	PDE-319	
	Display window	PAM1474	PAM1474	PAM1512	PAM1474	
	Instruction manual (English)	PRB1172	PRB1172	•••••	PRB1172	
	Instruction manual (French)	•••••	PRC1046	•••••	•••••	
	Instruction manual (English/French/German/Italian)	•••••	•••••	PRE1162	•••••	
	Instruction manual (Dutch/Swedish/Spanish/Portuguese)	•••••	•••••	PRF1056	•••••	
	CD packing case	PHG1818	PHG1819	PHG1819	PHG1819	For packing
	Recycle label	•••••	PRW1253	•••••	•••••	For packing

MAIN BOARD Ass'y

MAIN BOARD Ass'y of PD-TM2/KC, HEM, SD and MAIN BOARD Ass'y of PD-TM2/KU have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		KU type	HEM type	SD type	
⚠	IC31	•••••	ICP-N10	•••••	
	D391-D394	1SS254	•••••	ISS254	
	L391	LAU010K	•••••	LAU010K	
	C393	CCCSL101J50	•••••	CCCSL101J50	
	C441, C442	CQSA102J50	CQMA102K50	CQSA102J50	
	R391	RD1/6PM244J	•••••	RD1/6PM224J	
	R392	RD1/6PM102J	•••••	RD1/6PM102J	
⚠	Terminal	•••••	•••••	RKC-056	
⚠	Terminal	•••••	•••••	RKC-059	

MAIN BOARD Ass'y of PD-TM2/KC is the same as that of PD-TM2/KU.

HEADPHONE BOARD Ass'y

Althogh HEADPHONE BOARD Ass'y of PD-TM2/KC, HEM, SD and HEADPHONE BOARD Ass'y of PD-TM2/KU are different in part number, they have the same service parts.

7.2 LINE VOLTAGE SELECTION

Line voltage can be changed with following steps

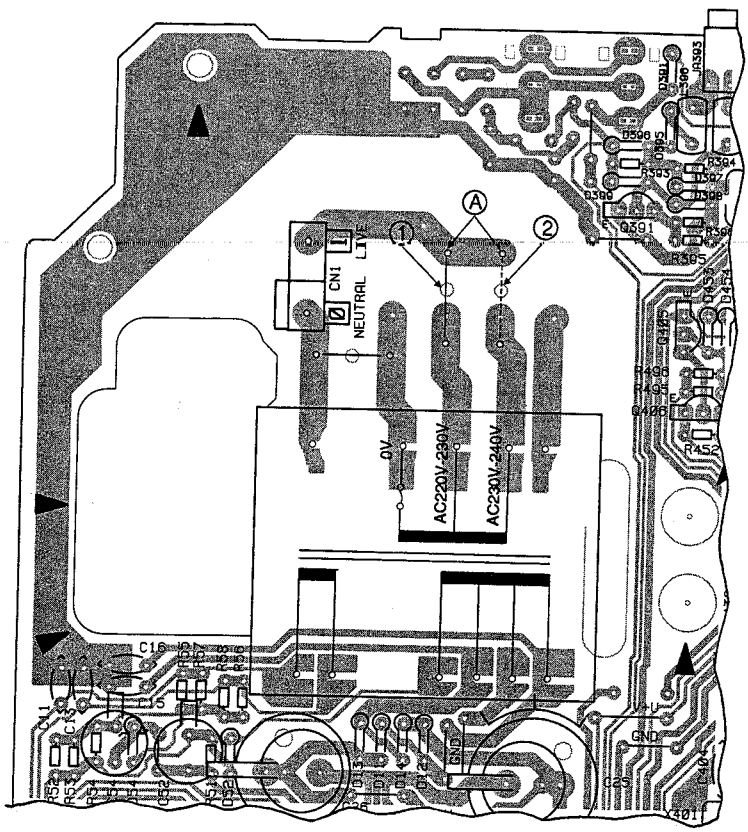
1. Disconnect the AC power cord.
2. Remove the bonnet.
3. Change the position of the jumper Ⓐ as follows.

Voltage	Jumper Ⓐ position
220V-230V	①
230V-240V	②

4. Stick the line voltage label on the rear panel.

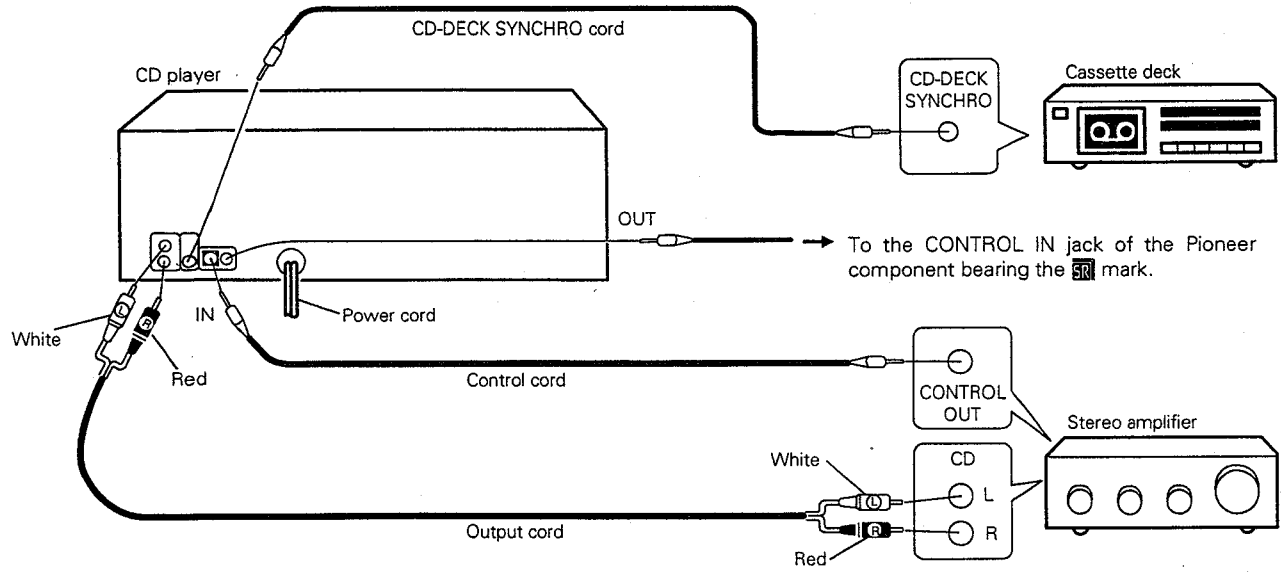
Description	Part No.
220V label	AAX-193
240V label	AAX-192

MAIN BOARD Ass'y



8. CONNECTIONS

- Make sure that all of the components are turned off before making connections.



Making connections

1. Connect the OUTPUT jacks of this unit to the input jacks (CD or AUX) of the amplifier. Make sure that the white plugs are connected to the left (L) jacks and the red plugs to the right (R) jacks.
- Be sure not to connect this unit to the amplifier's PHONO jacks, as sound will be distorted and normal playback will not be possible.
2. Connect the power cord to a household AC wall outlet or an AC outlet on your amplifier.
- Make sure plugs are inserted fully into the jacks and wall outlet.

CD-Deck synchro function

If you have a Pioneer cassette deck provided with the CD-Deck synchro function, connect the CD-DECK SYNCHRO jacks of the CD player and cassette deck. With this function, synchro recording can be carried out between player and deck.

- For details on connections and operation, refer to the instruction manual supplied with the cassette deck.
- The CD-DECK SYNCHRO cord is not supplied with the CD player.

System remote control with a Pioneer stereo amplifier that has the SR mark

When a Pioneer stereo amplifier bearing the SR mark is used, connect the CONTROL IN jack on the rear panel of the CD player to the CONTROL OUT jack of the amplifier. This will enable the CD player to be controlled using the remote control unit supplied with the stereo amplifier. If you do not plan to use this feature, it is not necessary to connect CONTROL IN/OUT jacks.

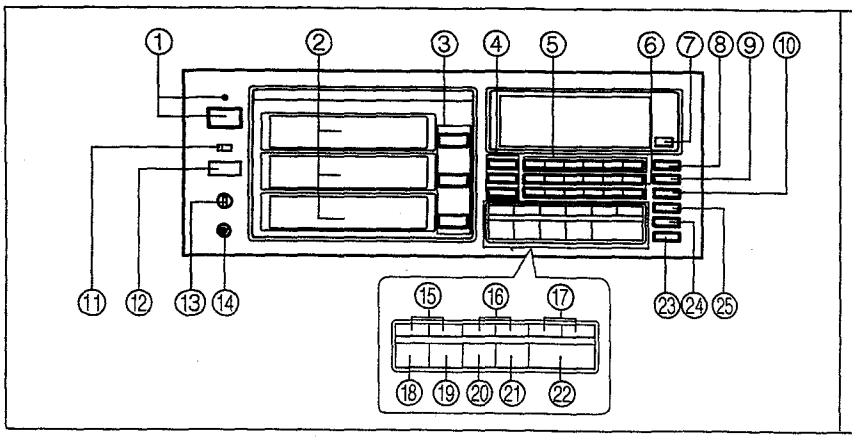
- The control cord is supplied with the CD player.
- The remote control unit supplied with the amplifier can be used to control Play, Stop, Pause, Track/Disc Search and Disc Change operations.
- For instructions regarding connections and operation, refer to the operating instruction manual provided with your stereo amplifier.

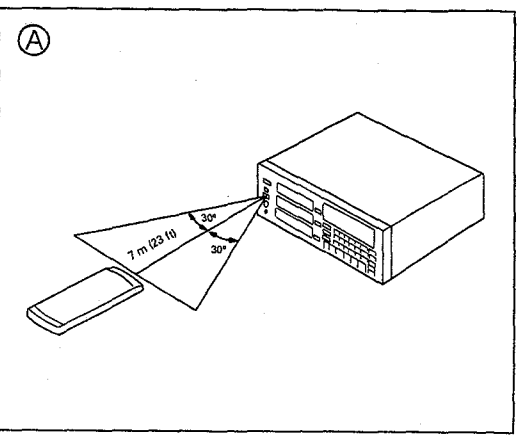
NOTES:

- *When a control cord is connected to the player's CONTROL IN jack, direct control of the player with the remote control unit is not possible. Operate the player with the remote control unit by aiming it at the amplifier.*
- *Be sure to connect both of the control cord's plugs securely to the CONTROL IN and CONTROL OUT terminals. Do not connect only one end of the cable.*
- *Be sure to turn off the power of the amplifier before connecting the power cord and output cord.*

9. PANEL FACILITIES

FRONT PANEL





① POWER STANDBY/ON switch and STANDBY indicator
② Magazine insertion slots
③ Eject buttons (⏏)
(MAGAZINE 1 – MAGAZINE 3)
④ MAGAZINE buttons (M1 – M3)
⑤ DISC NUMBER buttons (DISC 1 – DISC 6)
⑥ TRACK NUMBER/Digit buttons
(1-10, +10, ≧ 20)
⑦ ADLC button
⑧ PROGRAM button
⑨ DELETE button
⑩ COMPU PGM EDIT button
⑪ TIMER switch
⑫ Remote sensor
Receives the signal from the remote control unit.
⑬ Headphones volume (PHONES LEVEL)
⑭ Headphones jack (PHONES)
⑮ AUTO FADER buttons (/)
⑯ MANUAL SEARCH buttons (◀◀/▶▶)
⑰ TRACK SEARCH buttons (⏮/⏭)
⑱ RANDOM PLAY button
⑲ HI-LITE SCAN button
⑳ STOP button (■)
㉑ PAUSE button (❚❚)
㉒ PLAY button (▶)
㉓ TIME button
㉔ REPEAT button
㉕ TIME FADE EDIT button

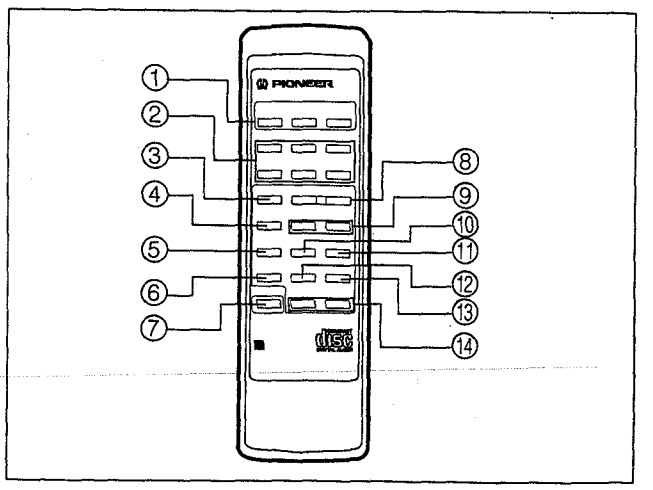
Ⓐ REMOTE CONTROL OPERATIONS

When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.

NOTE:

- *If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.*

REMOTE CONTROL UNIT



Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

① MAGAZINE buttons (M1 - M3)
② DISC NUMBER buttons (1 - 6)
③ Stop button (■)
④ RANDOM PLAY button
⑤ HI-LITE SCAN button
⑥ ADLC button
⑦ POWER button
⑧ Pause/Play button (❚❚ /▶)
⑨ Track search buttons (⏮ / ⏭)
⑩ PGM button
⑪ DELETE button
⑫ CHECK button
⑬ CLEAR button
⑭ OUTPUT LEVEL buttons (+/–)

10. SPECIFICATIONS

1. General

Type ..... Compact disc digital audio system
Power requirements
European models ..... AC 220 - 230 V, 50/60 Hz
U.K., Australian models ..... AC 230 - 240 V, 50/60 Hz
U.S., Canadian models ..... AC 120 V, 60 Hz
Other models ..... AC 110/120 - 127/220/240V (switchable) 50/60 Hz
Power consumption ..... 16 W
Operating temperature ..... +5°C - +35°C (+41°F - +95°F)
Weight ..... 6.8 kg (15 lb)
External dimensions ..... 420(W) X 328(D) X 176(H) mm 16-9/16(W) X12-15/16(D) X 6-15/16(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz
S/N ratio ..... 102 dB or more (EIAJ)
Dynamic range ..... 96 dB or more (EIAJ)
Channel separation ..... 96 dB or more (EIAJ)
Harmonic distortion ..... 0.003 % or less (EIAJ)
Output voltage ..... 2.0 V
Wow and flutter ..... less than ±0.001% (W.PEAK) (below measurable level) (EIAJ)
Channels ..... 2-channel (stereo)

3. Output terminal

Audio line output
Headphone jack with volume control
Control input/output jacks
CD-DECK SYNCHRO jack

4. Functions

Number of discs to be stored - maximum 18.

Basic Operation Buttons
- PLAY, PAUSE, STOP

Search Function
- Magazine Search
- Disc Search
- Track Search
- Manual Search

Programming
- Maximum 48 steps
- Pause
- Program Check/Correction (remote control unit)
- Program Clear (single track or all tracks)
- Delete Play

Repeat Functions
- 1 Track Repeat
- All Discs Repeat
- Program Repeat
- Random Play Repeat
- Delete Play Repeat
- Delete Random Play Repeat
- Magazine Hi-Lite Scan Repeat

Random Play
- Random Play (repeat also available)
- Delete Random Play (repeat also available)

Switching Display
Time consumed, remaining time (track/disc), and total time

Timer Start

ADLC
Automatic Digital Level Controller

Digital Level Controller
Volume control can be done.

One-touch Fade
Fade-in and fade-out possible.

Compu Program Editing
Selects the tracks for both sides of the tape within the specified time.

Time Fade Editing
Selects the tracks within the specified time. Playback stops with a fade-out.

Magazine Hi-Lite Scan (repeat also available)
- DISC SCAN
- TRACK SCAN

Power On/Off (remote control unit)

Automatic Power On Function

Power Down Eject Function

5. Display

FL Tube Display
- PLAY indicator
- PAUSE indicator
- FADER indicator
- SCAN indicator
- Elapsed Time Display (min, sec)
- Remaining Time (track/disc) Display
- Total Time Display
- Magazine Number, Disc Number, Track Number
- Program Step Number
- Program Indicator
- Repeat Indicator
- Random Play Indicator
- ATT Level Display
- Time Fade Editing Indicator
- Compu Program Editing Indicator
- Delete Indicator
- Disc Symbol Indicators
- ADLC indicator

6. Accessories

- Remote control unit 1
- Size AAA/R03/dry batteries 2
- Six-compact-disc magazine 3
- Single-compact-disc magazine 1
- Output cord 1
- Control cord 1
- Operating instructions 1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

The Magazine Type Multi-Play CD Players with mark and the Magazines with the same mark are compatible for 5-inch (12cm) discs.